AUSTRALIAN JOURNAL OF LABOUR ECONOMICS

A JOURNAL OF LABOUR ECONOMICS AND LABOUR RELATIONS

Volume 20 • Number 3 • 2017 • ISSN 1328-1143

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Official Journal of the Australian Society of Labour Economists

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Australian Journal of Labour Economics
Bankwest Curtin Economics Centre
Curtin Business School, Curtin University
GPO Box U1987 Perth WA 6845 Australia

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Conversations with an Eminent Labour Economist: Thomas Lemieux

Thomas Lemieux (TL) is a Professor at the Vancouver School of Economics at the University of British Columbia (UBC). He completed his PhD in Economics at Princeton University in 1989. He is a Fellow at the Royal Society of Canada and the Society of Labor Economists. He has written extensively on wages and income distribution and has contributed significantly to advances in econometric techniques including regression discontinuity. He was interviewed at the Asian and Australasian Society of Labour Economics (AASLE) conference in December 2017 by ***Rob Bray (RB)*** from the Centre for Social Research and Methods at the ANU.

RB: What advice would you give to a young scholar starting off a career in labour economics?

TL: Spending quite a bit of time being on the other side, the editor's side, looking at papers, maybe I am more optimistic than others, but I think really what matters is to work on interesting questions. That's often the first thing we look at when we receive papers at journals.

This is important because obviously publishing in journals is the most important part of a young scholar's career. It is often what's going to determine where they end up, where their career is going to go. I think often there's a sense that it's more the latest fashion of the day or doing the more technical that is important, but I think it's important to keep in mind – at the end of the day – that what most economists are interested in is seeing some interesting work on important questions. Also, the interesting and important questions should be answerable with data, especially in the field of labour economics. Often that's the big challenge. But I would say, at the same time, that over my own career the growth in the data that's available for research has been very impressive.

David Card (2017)'s talk at the AASLE conference provides a good illustration of this, with him explaining that even the way we think about the labour market depends on the data available. That is, before we had good and detailed data about firms we couldn't really think so much about the role of firms and this affected the type of models we had in mind.

So I think – yes, what makes for a good paper, a good research contribution, is when you have an interesting question that you can actually answer with some data. And often it's some new data that's better in one dimension or another than what people have done before.

RB: Do you think there are some big questions that we avoid. For instance, If we go back, say to the 1920s, questions such as the theory of wages received a lot of attention by the economics profession, but we don't hear much about that today.

TL: Yes, it's true, but it also depends on how we define big questions. I think as in many other fields, and you see that definitely in the sciences, as the body of work and research keeps growing and growing, often the contribution will become a little narrower. So, at the same time compared to what was being done back then it's true it's probably narrower. But now you can still cut bits and pieces of interesting questions and give a more substantive answer because we have data to answer those questions.

But do you know what? In the field of labour economics I get the sense that over the last four, five or ten years lots of important questions that have been ignored for a certain period of time are coming back.

Probably part of the reason is that there was a period where, in the terms of research, a huge focus was put on using experiments or natural experiments, or making sure that we have this very convincing source of variation to answer different questions. I think the issue was that for some of the bigger questions we couldn't really think of any way of either running an experiment or having an interesting natural experiment. As a result people started, maybe not ignoring, but paying less attention to, some of these questions. For instance, thinking about some of the questions about the connection between macro and labour, given lots of the macro questions are happening at the whole economy level, it's hard to think of the natural experiments that you can use to answer some of these questions. So I think that's why, at some point, the search for these compelling research designs had a real impact on the field of labour economics and often labour economists started working more on education, health, or on crime, because there they could find these kind of interesting natural experiments.

However, I feel that over the last 10 years, and partly because of better data coming online, as I mentioned for example with David Card (2017) and firm data, we are in a position where we can start making first steps in understanding how the labour market really works. I think also, what Americans call the great recession, has also played a role. I've noticed it in the US because suddenly, from about 2009, not only was unemployment a very big issue, but also long term unemployment, while it was traditionally not so much an issue. Suddenly we started seeing much more research about unemployment and asking what explains these long unemployment spells: 'Does it have to do with the structure of the US unemployment insurance program?'; 'Does it have to do with some scarring of the workers?'; and so on.

But I would say, overall in labour economics, people have been going back to some of the core questions that have been left aside a little, 'because we have this neat natural experiment'.

RB: The way you are talking about labour economics it seems you see it mainly through the lens of empirics … what's the role of theory?

I think during the 1980s and 1990s, there was actually lots of progress made on the theory side and lots of it had to do with leaving aside the standard competitive model and thinking more about the employment relationship, the role of contracts and so forth. Bengt Holmstrom recently got a Nobel Prize and lots of his work was very innovative labour theory, bringing in incentives, imperfect information, etc. But, I think the connection between that kind of theoretical work and empirical work still hasn't been fully established. Actually, some of my own work looks at performance, big contracts, and mode of compensation and things like that. So I'm always intrigued by how we can connect that to these models. However, I would say that what most likely happened is that over the last 20 or 30 years so much more data became available. It's a little bit like when you talk about technological change and how it affects the nature of work. I think in our field the big technological change was that there were so many computers and they are way more powerful. You can have huge databases and there is more and more data coming on line.

So I think the big reason why labour economics, certainly over recent years, has been highly empirical is that, although we can keep improving theory, we don't have this big technological revolution that would help push the frontier in terms of theory.

Also, our field has always been more empirical than most other fields of economics and it's not surprising that most of the work in labour continues to be empirical. But talking about this data revolution, it is not just in labour economics. Many other fields that used to be much more theoretical are now much more empirical, because they now have data that can be used. So to me it's not so much that theory is dead, so to speak, but if you're a young researcher interested in labour economics, it tends to be that the direction in which you have more chances of making a new interesting contribution is often finding a new set of data.

RB: One of the big questions which has re-emerged is inequality. This raises two issues: One is why it has re-emerged? Second, is are we so certain that we actually have to do something about it?

TL: As you say, equality is certainly one of the big questions coming back. I clearly remember when I was a graduate student, when I started in graduate school in my PhD in the 1980s, no one was talking about inequality. I was at Princeton where Alan Blinder had done some work on the income distribution and inequality. He had written something in the late 1970s and early 1980s saying that the only remarkable thing about inequality is that how stable it is, 'it's not changing or anything'. Then there was a big recession in the early 1980s, 1981 to 1984 in the US, and then suddenly around 1986, remembering that back in those days it always took a couple of years before the micro data would become available, some people start noticing, 'oh, it looks like inequality is growing'. I remember many distinguished labour economists at the time being interviewed by the New York Times, or whatever, and they said, 'oh you know, it's just the impact of the recession: lots of job loss; less skilled workers;

manufacturing suffering more but, you know, once the economy comes back we'll be fine'. Then two, three years later people realised that it was not coming back and inequality kept growing. And within a few more years, that's by 1990, it was the new big question in labour economics.

The growth in inequality in the US, and this emerging research focus then generated lots of interest, in the UK in particular, because they then started noticing inequality increasing in their countries. So I think economists got interested in inequality again because inequality was suddenly growing.

Inequality research is also a good example of a topic where many different approaches have been used. Some of the most influential work on inequality is very descriptive. Picketty and Saez (2003), for instance, have had enormous influence. They talk a little about explanations but much of what they have done is spend an enormous amount of energy and effort in developing collaborations with co-authors all over the world who collect new data and see what's happening in different countries over the long run. It is actually an interesting case where you have a mix of highly descriptive work. With other work, in cases like the minimum wage, for instance, in the US in particular, where you have some variation across the states, researchers use a little more of a natural experiment or difference in difference approach to try to assess the role of that particular factor. But still what I think is interesting about inequality is how all kinds of different approaches, including very descriptive work, has been pursued and lots of this highly descriptive work was published in some of the best journals in the economic profession. I think this is not only because it's Picketty and Saez but because it's a big question. In that case just being interested in the question and knowing what's really in the data became something that was very interesting.

RB: Turning to the second part, about whether we should be concerned about income inequality?

TL: Well, the question of whether inequality is bad, and do we need some? It's true that early on, typically the more Chicago - type people would say 'well, you know, it's important to have incentives in the system, to have returns to scale and to have rewards to effort'. From that point of view we need some inequality. I don't think anybody is really debating the basic point that you need some incentive, although we can certainly argue about what is its importance. Even if you're running a firm, what's the role of purely monetary incentive versus other issues in the way you run your business and get people to like their work and contribute. But leaving that aside, there is no question that some incentives are needed in the system, but this is only part of the issue. Rather it becomes a case of using the kind of framework that has been put forward by people like Atkinson and others saying, okay, but we also have a social welfare function.

Essentially an argument where the main reason why inequality is bad is just that if you give one more dollar to a very rich person it doesn't have any impact, while it could make a big difference for people at the lower end. I think at the end of the day it's mostly that – unless you have a good reason why inequality is good, say for growth or for incentives. However It seems to me that most of the growth that we've had in inequality, especially in the US, has really not increased the incentive effort, nor has

it contributed to overall growth. For example, even back in the 1980s the return to education was quite large, along with the gains from career progression if you were doing well. So the idea that by paying CEOs ten times more than they were in 1980 is really going to change behaviour, that is quite unlikely.

RB: So we should be listening a bit more to some of the other fields of economics as well?

TL: Yes. When I was a young professor at one point I was asked to teach a course on income distribution covering subjects such as income distribution, inequality and poverty, and then I actually spent quite a bit of time reading more of the public economics and welfare literature - people such as Atkinson and others - because essentially I knew nothing of that from my training. I don't think that has changed very much. I think it's one of these things it would probably be good for every economist to know a little more about, but at the same time from our point of view, when we look at inequality, partly it's just a more substantive way of saying that inequality is bad.

To me what I find more interesting is actually going down to the explanation for growth in inequality because I basically don't think that this inequality is doing anything good in terms of growth, or putting in more incentives so that people can be more entrepreneurial. Questions about the bargaining power of workers and the role of labour market institutions and unions; and the labour share, actually a much more central issue. It's something else that when I was in graduate school I didn't hear much about, but then when I was teaching my inequality course as a young professor, I started reading some older work from earlier in the 20th century where this whole question of income distribution, probably because of data limitation, was all about how much goes to capital and how much goes to labour in a very aggregate way. Once again that's a question that people really stopped thinking about for the same reason, 'well, the only remarkable thing of the labour share now is how flat it has been'.

But now that labour's share has been declining it has been raising lots of the big questions. I have not worked on that very much so I don't want to venture too far on the explanation. However, it certainly seems to be a sign, while there may be some other explanations too, that the changes in the bargaining power of workers are so large that we're even detecting it at the aggregate level. I think it's also related to one of the reasons why I find what's happening to the top 1 percent interesting because early in my career when there was a paper about chief executive pay, I felt that was very boring work and not that particularly interesting as it was only a small fraction of the workforce. But then inequality started increasing to the point that the share of total national income going to the top 1 percent was becoming quite important. That's when I started thinking that it's actually important to understand what's happening to these very high income workers because even at the aggregate level there is an important impact. So then when you actually combine the facts that the labour share is declining, and that among labour an increasing fraction goes to the 1 percent, it means that the share of national income going to the lower 99 percent has really fallen quite drastically.

I think again that's a case where, because of these big changes that we're now seeing, it has become again a hot question to understand. And in one sense maybe that's the right way to go. When big things happen in society we should actually redirect our research effort to this.

RB: One last question. Looking at the citations of your most cited paper, DiNardo, Fortin, and Lemieux (1996) - the DFL paper - suggests very gradual build up over time, do you think this was because of slow permeation of ideas or is it because there's now been an explosion of interest. And are there any issues for young scholars who write papers and no one cites them?

TL: The story of that paper is interesting. I mean what I often tell young scholars that now that I'm a well-established person, I will write a paper and then I get invited to present it at many places so I will present that paper many times. But with the DFL paper I was only invited once to present it, to a seminar at the University of Michigan. I guess part of that was because at the time I was just a new scholar, so people didn't really know me. Then it was almost at random that someone asked me, 'do you want to come and present?' So yes it's my most cited, and probably the paper I'm most proud of, and I almost did not present it.

While the pattern of citations in part reflects the way Google Scholar works I would say that at the time it was viewed as a bit of a controversial take on that question because the key papers that were written in the early 1990s about inequality were really very conventional. They were about supply and demand, arguing 'so what's happening in inequality must be that demand for highly paid workers is going up, and here we go'. I mean, if you look at a paper I really like, and which was extremely influential, by Katz and Murphy (1992), it's basically just that the supply of highly educated workers is growing and if the return to education is going up despite that, it must mean that demand is going up even more, and we're done – I am exaggerating a bit.

In the DFL paper we started looking at the data in a different way. At the time people would focus on wage differentials, so we said let's just plug in the distribution and then – then we saw that for men in the US: 'oh there seems to be a spike and the minimum wage seems to have a real effect'. I remember, at this moment we said, 'well, if the minimum wage has a large impact for men what is it going to be for women'; so then we just got the data for women and plugged the distribution in and essentially the distribution looked like a triangle. You have the minimum wage and then it declined. When I saw that I thought, 'oh boy, that's going to be – that's going to be a good paper, I'm probably going to get tenure and everything, because we really found something important.

But you know, I think at first, because people thought the explanations were already there, 'it's supply and demand' there was not much attention. We had a few people such as Richard Freeman, of course, say, 'oh no, you should use bargaining power, it can be important',and people would say, 'oh yeah, yeah, Richard, it's probably a part of the explanation', but just part of it. At the time it was not a conventional explanation. Eventually, however, people realised that, yes, it's a big part of the story.

That is also an example of work which was successful because we were looking at things differently, really trying to look at the whole distribution instead of just specific wage differentials.

There is a methodological part of the paper too – essentially we suggested this way of constructing counterfactuals doing these 'what if' exercises. For instance, 'what if the unionisation rates were still as high as the early 1970s'. Actually that part – the methodological part - also caught on and I think part of the reason why the citation has been going up over time is not purely for its contribution to the labour inequality literature but also the method.

It's actually an interesting case, and has a bearing on the question of advice to young scholars. When I was head of my department at the annual meeting with all my young colleagues, I was telling them about the importance of going to conferences and making sure their work was getting to be known. I said, of course, another way of getting work to be known is to give seminars, but the problem is that to give seminars you need someone to invite you. So I told them, well, you can still invite more senior people to present at UBC and then you can get to know them and tell them about your work and then they can invite you back to their department. So that was my little tip. Of course I tell them I understand that you cannot expect a young scholar to get five, ten invitations a year and then I just give this example and say actually my best paper was almost never presented because I was the new person.

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Labour market transitions in Australia and Japan: A Panel Data Analysis

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Abstract

We compare labour market transitions between Australia and Japan using longitudinal data, applying dynamic multinomial models controlling for initial values and unobserved heterogeneity. For Australia, casual or fixed-term employment in period t-1 significantly raises the probability of permanent or ongoing employment in period t for both men and women. For Japan, fixed-term employment in period t-1 does not have any significant effect on the probability of permanent or ongoing employment in period t for either sexes. While for Australian women, permanent or ongoing employment in the current period significantly lowers the probability of casual or fixed-term employment in the subsequent period, for Japanese women, there is a corresponding increase in probability. The theoretical probability of labour market transitions from fixed-term employment to permanent employment is the lowest for Japanese women among the four country-gender groups.

Keywords: fixed-term employment, permanent or ongoing employment, unobserved heterogeneity, dynamic multinomial logit model, labour market transitions
JEL Classification Codes: C23, J21, J64

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Acknowledgements
This work was supported by the Japan Society for the Promotion of Science under Grant Nos. 17K03780 and 26380273. The authors wish to express their gratitude to the Melbourne Institute of Applied Economic and Social Research and Keio University Panel Data Research Centre for releasing the Household, Income, and Labour Dynamics in Australia Survey and the Keio Household Panel Survey, respectively. The authors are also grateful for the useful comments received from Professors Daiji Kawaguchi, Michio Naoi, Lixin Cai, and the anonymous referees. All remaining errors are ours.

1. Introduction

In most countries, labour markets have several submarkets or segments, distinguished by different characteristics and behavioural rules. The dual market theory hypothesises that a dichotomy has developed between a high-wage primary segment and a low-wage secondary segment. Working conditions in the primary segment are generally favourable; there is steady employment and job security, and the rules that govern the organisation of employment are well defined and equitable. The characteristics of secondary employment, on the other hand, are less favourable. Work here has little job security and staff turnover rates are high.

Whether labour market segmentation has a significant effect on wages or the income distribution depends on the allocation of labour. In countries with high degrees of labour market transitions, employees in the secondary labour market have ample opportunities to access the primary labour market and labour market segmentation does not directly lead to dualism in income distribution. On the other hand, in countries with low degrees of labour market transitions, employees in the secondary market have limited access to the primary market and the dualistic structure of labour markets tends to be fixed and lead to persistent wage differentials.

This study compares the labour market dynamics in Australia and Japan, with a special focus on the transitions out of the secondary market. Australia and Japan share the issue of labour market dualism but for different backgrounds and with different outcomes. In Australia, labour market dualism has been observed since the 1980s, due to various factors, such as increased competition in the international market, technological changes, and labour market deregulation. This trend occurred in Japan from the 1990s, due to economic recession (whose effects have persisted for more than 20 years) and consequent increases in unemployment rates, increased competition, and technological changes. The speed of labour market casualization in Japan was higher and accordingly, the effects on income distribution were more serious than in Australia (Corbett *et al*., 2009). Having undergone substantial labour market changes, Australia has a huge longitudinal data resource and a rich literature in labour market analysis. We expect that a comparative analysis on the common and alternative aspects of labour market dualism and its dynamics will contribute to a deeper understanding of the problems inherent to labour markets in this era of change.

Empirical research on the dual labour market in Australia in the 1980s has been presented by Gregory and Duncan (1981), Zagórsky (1989), and others. Since the end of the 1990s, researchers have focused on the labour market segmentation accompanied by labour market casualisation (Burgess and Campbell, 1998; Mitchell et al., 2005). Since the development of longitudinal data, extensive research on labour market dynamics has found a lock-in effect of the lower tier of the labour market (Bill, Mitchel, and Welters, 2006; Welters and Mitchell, 2009; Watson, 2013; and McVicar, Wooden, and Fok, 2017). Such 21st century studies could be interpreted as a new type of dual labour market analysis.

In Japan, empirical research of the dualistic labour market also traces back to the 1980s, although the main focus was on the wage differentials between large, and small or medium sized enterprises (Odaka, 1984). Ishikawa and Dejima (1994) first identified two distinct wage functions corresponding to the two tiers of labour markets. Teruyama and Toda (2017) and Teruyama (2018) followed Ishikawa and Dejima's research, and identified different wage-tenure and wage-experience profile patterns between regular and non-regular employment. Significant wage differences between the two segments have been analysed by a number of studies including Ohta (2006), Takahashi (2016), and Morikawa (2017).

While researchers in Australia try to analyse the dynamism of the labour market that brings about dualistic structures, researchers in Japan tend to assume that the dualistic structure of the labour market is a given condition. Accordingly, few empirical analyses have hitherto attempted to examine the labour mobility between the two segments. Consequently, this paper measures the probability of changing employment status in the Japanese labour market and compares this with Australia. We use comparable longitudinal data/periods for each country, and apply similar econometric methods. The econometric model considers individual unobserved heterogeneity, endogeneity, and initial conditions of employment status.

The remainder of this paper is organised as follows. Section 2 takes a general view of changes in labour markets of both countries and Section 3 reviews previous research, introducing initial analyses for both countries. Section 4 explains the data, sets up the model, and presents the hypotheses. Section 5 presents the empirical analysis and discusses results. Section 6 concludes the paper.

2. Changes in labour markets in Australia and Japan

One of the most striking changes in Australia's labour market in the past 30 years is the rise in the proportion of casual and part-time employees as a proportion of total employment. Part-time employees are defined as employed persons who usually worked less than 35 hours a week (in all jobs) and either did so during the reference week or not at work in the reference week (Australian Bureau of Statistics, 2018). Casual employees are defined as those who were not entitled to paid holiday leave or paid sick leave.

In Japan, on the other hand, employees in the secondary labour market are referred to as 'non-regular employees' as opposed to 'regular employees'. The past 30 years of the Japanese labour market have also been characterised by a rise in the proportion of non-regular employees. However, the distinction between regular and non-regular employees depends on three factors: the specific employment contract, the workplace title, and the number of hours worked (Kambayashi, 2013).

The distinction based on the workplace title cannot be used for the comparative analysis, as there are not any equivalent titles in Australia. The distinction based on hours worked is not useful for international comparison, either, as there is no set division in hours worked between part-time and full-time employees in Japan. We adopt the distinction based on the labour contract, as it has a consistency with that of Australia, as discussed later.

3. Literature review

Numerous studies have focused on the persistency of underemployment, low wage employment, or changes in employment status in specific careers in both Australia and Japan. However, the study objectives have differed between the two countries.

For Australia, researchers have been devoted to studies on labour market transitions, in particular transitions out of the secondary segment of the labour market. Chalmers and Kalb (2001) performed a hazard function analysis, using data from the 'Survey on Unemployment and Unemployment Patterns from 1994 to 1997', to find that casual jobs shorten the time to move from unemployment to permanent employment. Buddelmeyer and Wooden (2008) (2011) used the Household, Income and Labour Dynamics in Australia (or HILDA) Survey to examine the rates of transition from casual employment to non-casual employment, based on a dynamic multinomial model, and found that for men, casual employment was a bridge to permanent employment while for women, this was not necessarily true. Cai (2014), using the first 12 waves of the HILDA Survey, showed that both state dependence and stepping-stone effects of low pay were present among Australian workers, after observed and unobserved individual heterogeneity are controlled for. Mavromaras, Sloane, and Wei (2015) applied a random-effect dynamic probit model to the first 10 waves of the HILDA Survey, and found that, compared with those with skill-matched jobs, those with skill-underutilised jobs are more likely to be unemployed in the subsequent period.

For Japan, researchers have been less interested in labour market transitions than in the persistent effects of the initial employment status to employment status in later career (Okamura and Islam 2011, Diamond 2018). A few studies have been devoted to the labour market transitions from non-regular to regular employment, as in Genda (2011) and Sano (2012).

4. Data, model, and hypotheses

Data

As longitudinal data covering similar periods are available for both Australia and Japan, we use the Household, Income and Labour Dynamics in Australia Survey (hereinafter referred to as the HILDA), developed by the Melbourne Institute of Applied Economic and Social Research, and Keio Household Panel Survey (hereinafter referred to as the KHPS) developed by Keio University. The first year for the HILDA Survey was 2001, whereas the KHPS began in 2004. We used waves 1–14 (2001–2014) for the HILDA Survey and waves 1–12 (2004–2015) for the KHPS.

The HILDA Survey is a nationally representative longitudinal study of Australian households. The study is funded by the Australian Government Department of Social Services (DSS). It annually collects information on a wide range of aspects of life in Australia, including household and family relationships, child care, employment, education, income, expenditure, health and well-being, attitudes and values on a variety of subjects, and various life experiences. The first wave consisted of 13,969 respondents.

The KHPS, on the other hand, is the first comprehensive longitudinal survey of households in Japan, conducted annually by Keio University, Tokyo. The survey questionnaire covers topics such as the respondents' education/employment status, academic background, household structure, time allocation, consumption, savings, financial assets, matters related with family, and views and behaviour.[2] The number of respondents for the first wave, in 2004, was 4,005 men and women aged 20–69. The comparison between the two longitudinal datasets is as shown in Appendix Table A1.

We combined waves 1–14 of the HILDA Survey and waves 1–12 of the KHPS, and selected samples from the wave 1 survey. That is, top-up samples are not used, as our analysis used the employment status information from wave 1.

Variables pertaining to employment status

Most of the preceding studies based on the HILDA Survey classifies employment status into six categories: 'employed on a permanent or ongoing basis', 'employed on a fixed-term contract', 'employed on a casual basis', 'self-employed', 'unemployed' and 'not in the labour force'. Although it is ideal to classify the employment status in the KHPS in the same manner, it is impossible, as the category 'casual employees' does not exist in Japan and the samples for 'unemployed' are too small to be an independent category.

In the KHPS, there are questions pertaining to employment status based on both workplace title and labour contracts. As the labour force classification based on the workplace title is not consistent with that in the HILDA Survey, we use the classification based on the labour contract. That is, for the KHPS, we classify employees into those with fixed-term contracts and those with permanent contracts according to the question; 'Do you have a fixed-term or an ongoing labour contract?' The social security system, which includes employee pensions, employment insurance, and parental leave, is less likely to cover fixed-term employees compared to those with permanent contracts in Japan (JILPT, 2010). In addition, they have less job stability, higher turnover rates and lower incomes than those with permanent contracts. That is, fixed-term employees in Japan share the characteristics of both casual employees and employees with fixed-term contracts in Australia (Swami, 2017; Gilfillan, 2018). For this reason, we classified employment status for both data as shown in Table 1. We group casual employees and fixed-term employees in the HILDA Survey into the same category termed FC in this paper[3].

2 The questionnaire for the KHPS is downloadable from the website: https://www.pdrc.keio.ac.jp/en/paneldata/datasets/jhpskhps/

3 We also included respondents who answered the question pertaining to the current contract of employment as 'others' in this category.

Table 1: Employment status for the HILDA Survey and the KHPS

	HILDA Survey		*KHPS*
N	Not in the labour force, Unemployed	N	Not in the labour force, Unemployed
S	Self-employed, Employer Employed in family business Unpaid family worker	S	Self-employed, Employer Employed in family business Unpaid family worker
FC	Employed on a casual basis[4] or Employed on a fixed term	F	Employed on a fixed term[5]
P	Employed on a permanent or ongoing basis	P	Employed on a permanent basis

The model

We employ a dynamic multinomial logit model as in Buddelmeyer and Wooden (2011), Prowse (2012), and Cai (2014). Consider four mutually exclusive states of employment for an individual, namely, (1) self-employment, (2) fixed term employment, (3) permanent employment, and (4) not working. (For the HILDA Survey, the fixed term includes casual employment.) We define categorical variable S_{it} such that $S_{it} = 1,2,3$ suggests that individual i is self-employed, employed for a fixed term (or on a casual basis), and permanently employed, treating non-working as a reference state. Further, let Y_{jit} be a dummy variable taking on unity, if $S_{it} = j$.

We assume that the net utility of choosing state*j*(where $j = 1,2,3$) is given by

$$Y_{jit}^{*} = X_{it}'\beta_j + \gamma_{j1}Y_{1i,t-1} + \gamma_{j2}Y_{2i,t-1} + \gamma_{j3}Y_{3i,t-1} + \alpha_{ji} + \epsilon_{jit}, \quad (1)$$

depending on the employment status of the last period, control variable X_{it}, and time invariant, individual-specific unobserved heterogeneity α_{ji}. The last term, ϵ_{jit}, denotes an identically independently distributed error. In this paper, ϵ_{jit} is assumed to follow type I extreme value distribution.

As in the case of univariate dynamic binary choice models with unobserved heterogeneity, ignoring the initial states, S_{i0}, from the model can cause biases on the parameter estimation. Thus, following Wooldridge (2005), we assume the structure of α_{ji} as

$$\alpha_{ji} = \phi_{j1}Y_{1i1} + \phi_{j2}Y_{2i1} + \phi_{j3}Y_{3i1} + \mu_{ji}, \quad j = 1,2,3. \quad (2)$$

4 In this paper, casual employment (for the HILDA Survey) is based on self-identification.
5 Among the KHPS respondents classified as 'F (fixed term employment contract), the proportion of 'non-regular employees' classified based on workplace title is 85.4 per cent for men and 96.2 per cent for women.

Here μ_{ji} casts tri-variate normal random effects:

$$\begin{bmatrix}\mu_{1i}\\ \mu_{2i}\\ \mu_{3i}\end{bmatrix} \sim N(0,\Sigma), \quad \Sigma = \begin{bmatrix}\sigma_1^2 & \sigma_{12} & \sigma_{13}\\ \sigma_{12} & \sigma_2^2 & \sigma_{23}\\ \sigma_{13} & \sigma_{23} & \sigma_3^2\end{bmatrix} \tag{3}$$

Note that the current model allows free correlations among random effects within individuals, and we can estimate them.

It follows from the above assumptions and rational choices of individuals,that the probability of $S_{it} = j$ conditional on the relevant variables, including random effects, is given by

$$Pr\left(S_{it} = j \middle| S_{i1}, S_{i,t-1}, X_i, \mu_{1i}, \mu_{2i}, \mu_{3i}\right) = \frac{exp\left(m_{jit}\right)}{\sum_{k=1}^{3} exp(m_{kit})}, \tag{4}$$

where,

$$m_{jit} = X_{it}'\beta_j + \gamma_{j1}Y_{1i,t-1} + \gamma_{j2}Y_{2i,t-1} + \gamma_{j3}Y_{3i,t-1} + \phi_{j1}Y_{1i1} + \phi_{j2}Y_{2i1} + \phi_{j3}Y_{3i1} + \mu_{ji}. \tag{5}$$

To construct the joint likelihood function of the sequence of outcomes $S_{i2}, S_{i3}, ..., S_{iT}$ conditional on S_{i1} and other controls, we need to integrate $\mu_{1i}, \mu_{2i}, \mu_{3i}$ out from the model. Specifically, a Gauss-Hermite quadrature is used for this purpose, the normal distribution in equation (3) being postulated.

(iv) Variable definitions

The independent variables are as follows: lagged latent variables for employment status: Y_{it-1}, latent variable for employment in the first period[6]: Y_{i1} dummy variables for age classes: *Age30_39, Age40_49 and Age50+*, dummy variable for marital status: *Married*, number of dependent children: C*hildren0_3* and C*hildren4_6,* dummy variables for highest education: *Degree, Diploma*, and *Certificate III/IV* (only for the HILDA Survey), and regional unemployment rate: *Region UR*.[7] The explanatory variable *Region_UR* represents the unemployment rate for each gender in each state or region. For the HILDA Survey, the unemployment rate in June of each year (original series) from the *Labour Force, Australia* is used, and for the KHPS, the unemployment rate in the first quarter of each year (original

6 We take the initial condition of employment status as suggested in Wooldridge (2005).

7 For the HILDA survey, respondents with diplomas or advanced diplomas are set as Diploma = 1. For the KHPS, respondents whose highest educational attainments are technical or junior colleges are set as Diploma = 1 as well. In Japan, there are not any qualifications corresponding to advanced diploma, certificate III, and certificate IV.

series) from the *Labour Force Survey* is used.[8,9] The independent variables are listed in Table 2.

Table 2: Explanatory variables

Variable	*Definition for the HILDA Survey*	*Definition for the KHPS*
Age30_39	Dummy = 1 if the respondent's age is from 30 to 39	
Age40_49	Dummy = 1 if the respondent's age is from 40 to 49	
Age50+	Dummy = 1 if the respondent's age is 50 or more	
Married	Dummy = 1 if the respondent is married or has a partner	Dummy = 1 if the respondent is married
Children0_3	Dummy =1 if the respondent has at least one resident children aged from 0 to 3	
Children4_6	Dummy =1 if the respondent has at least one resident children aged from 4 to 6	
Degree	Dummy = 1 if the respondent's highest education is university or higher	
Diploma	Dummy = 1 if the respondent's highest education is advanced diploma or diploma	Dummy = 1 if the respondent's highest education is graduation from technical or junior college
Certificate III/IV	Dummy = 1 if the respondent's highest education is Certificate III or IV	As there are no education levels equivalent to Certificate III or IV in Japan, this dummy is not used for KHPS
Region_UR	Unemployment rate in the state where the respondent lives. Unemployment rates by gender (as of June each year) are applied	Unemployment rate in the region where the respondent lives. Unemployment rates by gender (as of the first quarter each year) are applied

We removed observations for respondents either below 20 years of age or those above 60 years of age, as the former is mainly composed of students and the latter is composed of those either retired or about to retire. We also removed observations with missing values for any dependent or independent variables. Appendix Tables A2 and A3 provide the descriptive statistics for the samples segregated by gender.

8 ABS Statistics, catalogue no. 6202.0 - Labour Force, Australia, May 2017 is used. The unemployment rate for each state (or territory) is used.
9 Statistics Bureau, Labour Force Survey, Historical data table 8 is used. The unemployment rate is for each of the 10 regions (the 47 prefectures are classified into 10 regions in this table).

5 Results

(i) Econometric results

Firstly, we applied the dynamic multinomial logit model as in Section 3. Tables 3-1 and 3-2 report the results for the HILDA Survey for the labour market transitions of the male and female respondents, respectively. Tables 4-1 and 4-2 show results from the KHPS for the labour market transitions for the male and female respondents, respectively. The left-hand side of the tables are obtained from the multinomial logit estimation without random effects, while the right-hand side of the tables are obtained from the multinomial logit estimation with correlated random effects. Results shown in Tables 3-1, 3-2, 4-1 and 4-2 are all marginal effects, with standard deviations in parentheses.

For all estimated results, the variances and covariance of random effects are statistically significant. This suggests that the unobserved heterogeneity plays an important role in determining the employment status of individuals.

Secondly, we estimated probabilities of transitions in employment status from period *t-1* to *t* using the multinomial logit estimation with correlated random effects, as shown in Tables 5-1 and 5-2.

Table 3-1: Mean marginal effects, HILDA 2001-2014, men

HILDA, Men	*Model I without random effects*			*Model II with random effects*		
	P	*FC*	*S*	*P*	*FC*	*S*
Employment status, wave t-1						
Self-employed	-0.056*	-0.102*	0.670*	0.013	-0.069*	0.214*
	(0.008)	(0.008)	(0.009)	(0.014)	(0.012)	(0.013)
Fixed-term or casual	0.208*	0.281*	-0.017*	0.140*	0.065*	-0.033*
	(0.009)	(0.009)	(0.006)	(0.011)	(0.010)	(0.008)
Permanent	0.664*	-0.085*	-0.048*	0.387*	-0.120*	-0.056*
	(0.007)	(0.007)	(0.005)	(0.012)	(0.009)	(0.008)
Employment status, wave 1						
Self-employed	-0.013	-0.012	0.098*	-0.095*	-0.047*	0.408*
	(0.010)	(0.008)	(0.006)	(0.017)	(0.011)	(0.017)
Fixed-term or casual	0.042*	0.014*	0.009	0.136*	0.073*	0.015
	(0.007)	(0.006)	(0.005)	(0.014)	(0.010)	(0.009)
Permanent	0.100*	-0.029*	0.010*	0.284*	-0.025*	0.002
	(0.007)	(0.006)	(0.005)	(0.014)	(0.009)	(0.008)
Age (Reference: 20-29)						
30-39	0.010	-0.028*	0.007*	0.016*	-0.040*	0.015*
	(0.005)	(0.005)	(0.004)	(0.007)	(0.006)	(0.005)
40-49	0.006	-0.044*	0.014*	0.007	-0.057*	0.022*
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.005)
50-59	-0.024*	-0.052*	0.011*	-0.033*	-0.069*	0.017*
	(0.005)	(0.005)	(0.004)	(0.008)	(0.007)	(0.006)
Married	0.029*	-0.010*	0.012*	0.036*	-0.013*	0.163*
	(0.004)	(0.003)	(0.003)	(0.006)	(0.005)	(0.004)
Children 0-3	-0.004	-0.014*	0.005	-0.006	-0.015*	0.004
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.004)
Children 4-6	-0.007	-0.006	0.008*	-0.011	-0.006	0.007
	(0.006)	(0.006)	(0.003)	(0.007)	(0.006)	(0.004)
Degree	0.030*	-0.002	0.006*	0.063*	-0.019*	0.008
	(0.004)	(0.004)	(0.003)	(0.007)	(0.006)	(0.006)
Diploma	0.021*	-0.013*	0.008*	0.030*	-0.020*	0.016*
	(0.006)	(0.006)	(0.004)	(0.010)	(0.008)	(0.007)
Certificate	0.014*	-0.007*	0.007*	0.019*	-0.013*	0.016*
	(0.004)	(0.004)	(0.003)	(0.007)	(0.005)	(0.005)
Region_UR	-0.007*	0.003*	-0.0003	-0.009*	0.003*	0.0003
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
σ_S^2				4.724*		
				(0.384)		
σ_{FC}^2				2.401*		
				(0.176)		
σ_P^2				2.958*		
				(0.214)		
$\sigma_{S,FC}$				1.634*		
				(0.202)		
$\sigma_{S,P}$				1.722*		
				(0.218)		
$\sigma_{FC,P}$				2.058*		
				(0.174)		
Number of observations	47,261			47,261		
Log likelihood	-30,895.620			-29,758.793		

*denotes significance at the 5 per cent (or 1 per cent) significance level.

Table 3-2: Mean marginal effects, HILDA 2001-2014, women

HILDA, women	*Model I without random effects*			*Model II with random effects*		
	P	*FC*	*S*	*P*	*FC*	*S*
Employment status, wave t-1						
Self-employed	-0.015*	-0.044*	0.601*	0.043*	0.007	0.170*
	(0.007)	(0.007)	(0.010)	(0.013)	(0.012)	(0.010)
Fixed-term or casual	0.161*	0.383*	-0.006	0.102*	0.184*	-0.006
	(0.006)	(0.006)	(0.003)	(0.008)	(0.008)	(0.004)
Permanent	0.660*	-0.038*	-0.026*	0.370*	-0.055*	-0.024*
	(0.005)	(0.005)	(0.003)	(0.009)	(0.007)	(0.004)
Employment status, wave 1						
Self-employed	0.004	0.012	0.061*	-0.037*	-0.022	0.291*
	(0.009)	(0.008)	(0.004)	(0.015)	(0.012)	(0.017)
Fixed-term or casual	0.047*	0.034*	0.005	0.130*	0.093*	0.002
	(0.005)	(0.005)	(0.003)	(0.010)	(0.008)	(0.005)
Permanent	0.106*	-0.015*	0.008*	0.286*	-0.016*	0.001
	(0.005)	(0.005)	(0.003)	(0.010)	(0.007)	(0.004)
Age (Reference: 20-29)						
30-39	0.011*	-0.024*	0.012*	0.014*	-0.029*	0.013*
	(0.005)	(0.005)	(0.003)	(0.006)	(0.006)	(0.004)
40-49	0.004	-0.028*	0.013*	0.010	-0.035*	0.016*
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.004)
50-59	-0.021*	-0.057*	0.008*	-0.017*	-0.076*	0.007
	(0.005)	(0.005)	(0.003)	(0.007)	(0.007)	(0.004)
Married	-0.001	-0.010*	0.020*	-0.002	-0.022*	0.028*
	(0.003)	(0.003)	(0.002)	(0.005)	(0.005)	(0.003)
Children 0-3	-0.072*	-0.035*	0.003	-0.117*	-0.043*	0.007*
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.003)
Children4-6	-0.010	-0.0004	0.003	-0.035*	-0.001	0.008*
	(0.005)	(0.005)	(0.002)	(0.006)	(0.006)	(0.003)
Degree	0.051*	-0.001	0.012*	0.102*	-0.012	0.014*
	(0.004)	(0.004)	(0.002)	(0.007)	(0.006)	(0.004)
Diploma	0.028*	0.004	0.015*	0.057*	-0.011	0.024*
	(0.005)	(0.004)	(0.003)	(0.010)	(0.008)	(0.005)
Certificate	0.017*	0.001	0.006*	0.047	-0.002	0.007
	(0.004)	(0.004)	(0.002)	(0.007)	(0.006)	(0.004)
Regional_UR	-0.007*	0.003	-0.0002	-0.013*	0.001	0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
σ_S^2				3.663*		
				(0.288)		
σ_F^2				1.648*		
				(0.102)		
σ_P^2				2.909*		
				(0.157)		
$\sigma_{S,F}$				0.812*		
				(0.129)		
$\sigma_{S,P}$				0.976*		
				(0.159)		
$\sigma_{F,P}$				1.654*		
				(0.110)		
Number of observations	53,281			53,281		
Log likelihood	-38,939.016			-37,490.312		

*denotes significance at the 5 per cent (or 1 per cent) significance level.

Table 4-1: Mean marginal effects, KHPS 2004-2015, men

KHPS, men	*Model I without random effects*			*Model II with random effects*		
	P	*F*	*S*	*P*	*F*	*S*
Employment status, wave t-1						
Self-employed	-0.216*	-0.034	0.607*	-0.039	-0.021	0.094
	(0.063)	(0.022)	(0.060)	(0.085)	(0.023)	(0.079)
Fixed-term	0.085	0.440*	-0.178*	0.142	0.200*	-0.280*
	(0.069)	(0.041)	(0.060)	(0.084)	(0.051)	(0.080)
Permanent	0.621*	-0.023	-0.229*	0.392*	-0.004	-0.295*
	(0.062)	(0.022)	(0.057)	(0.087)	(0.025)	(0.079)
Employment status, wave 1						
Self-employed	-0.064*	-0.006	0.090*	-0.307*	0.010	0.416*
	(0.031)	(0.023)	(0.025)	(0.081)	(0.043)	(0.080)
Fixed-term	0.004	-0.005	0.020	0.008	0.062	0.034
	(0.028)	(0.021)	(0.024)	(0.064)	(0.041)	(0.045)
Permanent	0.032	-0.035	0.020	0.141*	-0.044	0.004
	(0.026)	(0.020)	(0.021)	(0.058)	(0.032)	(0.037)
Age (Reference: 20-29)						
30-39	-0.017	0.007	0.010	-0.017	0.002	0.023
	(0.009)	(0.006)	(0.008)	(0.013)	(0.008)	(0.012)
40-49	-0.015	0.008	0.008	-0.017	0.001	0.021
	(0.010)	(0.006)	(0.008)	(0.014)	(0.008)	(0.013)
50-59	-0.038*	0.018*	0.015	-0.049*	0.015	0.031*
	(0.010)	(0.006)	(0.008)	(0.015)	(0.009)	(0.013)
Married	0.018*	-0.013*	0.004	0.025*	-0.016*	0.002
	(0.006)	(0.005)	(0.005)	(0.011)	(0.006)	(0.009)
Children 0-3	0.005	-0.015	0.012	-0.004	-0.019	0.022*
	(0.010)	(0.008)	(0.007)	(0.013)	(0.010)	(0.010)
Children 4-6	0.002	0.006	0.002	0.007	0.003	-0.004
	(0.010)	(0.008)	(0.007)	(0.014)	(0.009)	(0.010)
Degree	0.003	-0.0005	-0.005	0.006	-0.002	-0.011
	(0.005)	(0.004)	(0.004)	(0.009)	(0.006)	(0.009)
Diploma	0.015	0.003	-0.015*	0.024	0.003	-0.029*
	(0.009)	(0.007)	(0.007)	(0.016)	(0.009)	(0.014)
Regional_UR	-0.006*	0.004*	0.004	-0.008*	0.003	0.005
	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)
σ_S^2				11.128*		
				(3.333)		
σ_F^2				6.669*		
				(2.440)		
σ_P^2				3.521*		
				(1.604)		
$\sigma_{S,F}$				7.807*		
				(2.565)		
$\sigma_{S,P}$				4.930*		
				(2.000)		
$\sigma_{F,P}$				3.950*		
				(1.712)		
Number of observations	7,198			7,198		
Log likelihood	-1,610.035			-1,563.372		

*denotes significance at the 5 per cent (or 1 per cent) significance level.

Table 4-2: Mean marginal effects, KHPS 2004-2015, women

KHPS, women	*Model I without random effects*			*Model II with random effects*		
	P	*F*	*S*	*P*	*F*	*S*
Employment status, wave t-1						
Self-employed	-0.035*	0.003	0.667*	0.042	0.046	0.198*
	(0.017)	(0.011)	(0.023)	(0.035)	(0.025)	(0.036)
Fixed-term	0.030	0.731*	-0.064*	0.047	0.495*	-0.100*
	(0.017)	(0.015)	(0.011)	(0.031)	(0.037)	(0.022)
Permanent	0.684*	0.061*	-0.063*	0.381*	0.114*	-0.088*
	(0.016)	(0.010)	(0.011)	(0.035)	(0.021)	(0.020)
Employment status, wave 1						
Self-employed	0.025	-0.024	0.064*	-0.019	-0.064*	0.321*
	(0.017)	(0.015)	(0.011)	(0.035)	(0.030)	(0.040)
Fixed-term	0.015	0.028*	0.013	0.036	0.127*	0.008
	(0.015)	(0.013)	(0.013)	(0.032)	(0.033)	(0.022)
Permanent	0.089*	-0.032*	0.018	0.289*	-0.077*	0.004
	(0.013)	(0.011)	(0.010)	(0.032)	(0.022)	(0.017)
Age (Reference: 20-29)						
30-39	-0.015	0.029*	-0.008	-0.012	0.037*	-0.012
	(0.015)	(0.013)	(0.012)	(0.020)	(0.016)	(0.016)
40-49	-0.024	0.041*	0.001	-0.029	0.065*	-0.003
	(0.015)	(0.013)	(0.012)	(0.022)	(0.017)	(0.169)
50-59	-0.059*	0.042*	0.011	-0.087*	0.069*	0.007
	(0.015)	(0.013)	(0.012)	(0.023)	(0.018)	(0.018)
Married	-0.048*	-0.0004	-0.017*	-0.077*	-0.009	-0.021
	(0.009)	(0.008)	(0.007)	(0.016)	(0.013)	(0.012)
Children 0-3	-0.006	-0.020	-0.008	-0.022	0.030	-0.011
	(0.013)	(0.012)	(0.008)	(0.018)	(0.018)	(0.012)
Children 4-6	0.025	-0.008	0.006	0.016	-0.007	0.012
	(0.013)	(0.012)	(0.008)	(0.017)	(0.016)	(0.011)
Degree	0.004	0.002	-0.016*	-0.006	0.014	-0.023
	(0.010)	(0.009)	(-0.007)	(0.020)	(0.016)	(0.015)
Diploma	0.015	-0.008	-0.013*	0.027	-0.011	-0.028*
	(0.008)	(0.007)	(0.006)	(0.016)	(0.013)	(0.012)
Region_UR	-0.006	-0.002	0.001	-0.011	-0.004	0.003
	(0.005)	(0.004)	(0.003)	(0.007)	(0.006)	(0.005)
σ_S^2				4.490*		
				(0.903)		
σ_F^2				1.794*		
				(0.521)		
σ_P^2				2.576*		
				(0.559)		
$\sigma_{S,F}$				1.179*		
				(0.543)		
$\sigma_{S,P}$				0.919		
				(0.529)		
$\sigma_{F,P}$				1.031		
				(0.410)		
Number of observations	7,570			7,570		
Log likelihood	-4,124.4681			-3,996.134		

*denotes significance at the 5 per cent (or 1 per cent) significance level.

Table 5-1: Predicted probabilities of labour market transitions based on the model with random effects, men

HILDA, Men	*Wave t*			
Wave t-1	*Not working*	*Self-employed*	*Fixed-term or casual*	*Permanent*
Not working	0.741 (0.227)	0.037 (0.080)	0.133 (0.130)	0.090 (0.108)
Self-employed	0.027 (0.057)	0.886 (0.143)	0.036 (0.054)	0.051 (0.075)
Fixed-term or casual	0.079 (0.101)	0.038 (0.074)	0.533 (0.171)	0.349 (0.176)
Permanent	0.021 (0.039)	0.018 (0.043)	0.073 (0.061)	0.889 (0.094)
KHPS, men	*Wave t*			
Wave t-1	*Not working*	*Self-employed*	*Fixed-term*	*Permanent*
Not working	0.710 (0.250)	0.081 (0.162)	0.043 (0.069)	0.166 (0.155)
Self-employed	0.005 (0.049)	0.967 (0.085)	0.006 (0.009)	0.022 (0.057)
Fixed-term	0.016 (0.050)	0.033 (0.051)	0.656 (0.213)	0.295 (0.207)
Permanent	0.001 (0.004)	0.006 (0.021)	0.011 (0.023)	0.983 (0.037)

Standard deviations are in parentheses.

Table 5-2: Predicted probabilities of labour market transitions based on the model with random effects, women

HILDA, women	*Wave t*			
Wave t-1	*Not working*	*Self-employed*	*Fixed-term or casual*	*Permanent*
Not working	0.812 (0.169)	0.021 (0.052)	0.104 (0.094)	0.063 (0.085)
Self-employed	0.081 (0.106)	0.798 (0.189)	0.065 (0.074)	0.057 (0.073)
Fixed-term or casual	0.110 (0.112)	0.023 (0.054)	0.597 (0.148)	0.270 (0.155)
Permanent	0.046 (0.068)	0.009 (0.028)	0.094 (0.068)	0.851 (0.119)
KHPS, women	*Wave t*			
Wave t-1	*Not working*	*Self-employed*	*Fixed-term*	*Permanent*
Not working	0.886 (0.119)	0.033 (0.073)	0.024 (0.025)	0.056 (0.079)
Self-employed	0.055 (0.099)	0.884 (0.165)	0.021 (0.035)	0.040 (0.079)
Fixed-term	0.025 (0.029)	0.007 (0.017)	0.855 (0.124)	0.113 (0.118)
Permanent	0.028 (0.044)	0.008 (0.025)	0.068 (0.080)	0.897 (0.111)

Standard deviations are in parentheses.

Key findings

Tables 3-1, 3-2, 4-1, and 4-2 indicate that the results based on the multinomial logit model with random effects are quite different from those without random effects. Moreover, they show that the variances and covariances of the random effects are statistically significant. This suggests that unobserved heterogeneity has a major role in labour market transitions in both countries. The key findings are summarised below.

Firstly, the results of the dynamic multinomial model indicate that for the HILDA respondents, casual or fixed-term employment in period *t-1* raises the probability of permanent or ongoing employment in period *t* by 14 per cent for men and 10 per cent for women, as compared with not working (either unemployed or not in the labour force) in period *t-1*, respectively. On the other hand, for the KHPS men and women, fixed-term employment in period *t-1* does not have any significant effects with respect to the probability of employment on a permanent basis in period *t*. That is, in Australia, fixed-term or casual employment could provide a stepping stone to permanent employment, but in Japan, this is apparently not true.

Secondly, for female respondents of the HILDA Survey, permanent or ongoing employment in period *t-1* lowers the probability of casual or fixed-term employment by 5.5 per cent. On the other hand, for female respondents of the KHPS, permanent or ongoing employment in period *t-1* raises the probability of fixed term employment by 11 per cent.

Thirdly, for female respondent of the HILDA Survey, self-employment in period *t-1* raises the probability of permanent or ongoing employment in period *t*, while this is not true for female respondents of the KHPS.

As presented in the table, the estimates of variances and co-variances of random effects are all statistically significant, proving the importance of handling unobserved heterogeneity when identifying state dependencies in both the Australian and Japanese labour markets. This finding suggests the strong possibility of biases in the estimated key marginal effects for the models without random effects. We therefore prefer the estimation results from the model with random effects.

Tables 5-1 and 5-2 list the predicted probabilities of labour market transitions from period *t-1* to period *t*. We find firstly, the theoretical probability of labour market transitions from fixed-term or casual employment to permanent or ongoing employment is approximately 35 per cent for HILDA men, 30 per cent for HILDA women, 27 per cent for KHPS men, and 11 per cent for KHPS women, if we make predictions from the multinomial logit model with correlated random effects.

Secondly, the probability that one stays in fixed-term employment for two consecutive years is highest for the KHPS women.

6. Conclusions

This study compared labour market transitions, or changes in employment status, between Japan and Australia. Using dynamic multinomial logit estimation we found that, for the HILDA respondents, either casual or fixed-term employment significantly raises the probability of permanent or ongoing employment in the subsequent period, while this is not true of the KHPS respondents, regardless of gender. For female respondents of the KHPS, employment on a permanent basis at present period has a significant positive, instead of negative, effect to the probability of employment on a fixed term basis in the subsequent period. We also estimated the probability of labour market transitions from period *t-1* to period *t* based on the dynamic multinomial logit estimation. The probability of transition from fixed-term or casual employment to permanent or ongoing employment was found to be the lowest for the female respondents of the KHPS among the four country-gender groups. On the other hand, the theoretical probability of continuing fixed-term employment for the two subsequent periods was highest for the female respondents of the KHPS. This suggests that Japanese women can become trapped in the secondary labour market. Overall, gender-based differences in labour market transitions are more significant in the KHPS than in the HILDA Survey.

These results could reflect the effects of Japanese style management in which most positions in the primary labour market are allocated to employees with permanent contracts, and rarely to employees with fixed-term contracts. The result pertaining to the transition from permanent to fixed-term employment could reflect the difficulty of balancing family life and employment on a permanent basis, for married women in Japan. However, we need to conduct another study to check if these hypotheses are supported or not.

As discussed in Section 1, while researchers in Australia try to analyse the dynamism of the labour market that could bring about dualistic structures, researchers in Japan tend to regard the dualistic structure as a given condition. Our research indicates that the duality of the labour market is deeper and more serious in Japan than in Australia, and that the different views of researchers in both countries could reflect the different degrees of dualism. However, it is possible that the characteristics of the Japanese labour market will undergo certain changes in the future.

In April 2018, the government of Japan amended the Labour Contract Act so that Japanese employees on fixed-term employment contracts will be entitled to request permanent contracts after five years of continuous employment. Future research should address the effects of this amendment in Japan from 2018 on. The experience and rich literature around labour conditions in Australia would be helpful in understanding the possible changes in the labour market dynamism, and assist with adjusting to new issues that might emerge due to future changes.

Appendices

A1: The HILDA Survey and the KHPS

	KHPS	*HILDA Survey*
Starting year	2004	2001
Gender	Both men and women	Both men and women
Age group for the first year	20 to 69	14 to 92
Number of respondents in the first wave	4,005	13,969
Interviews	Not conducted	Conducted
Continuity	Respondents are followed every year	Respondents are followed every year
Topping of the data	1,400 and 1,000 new individuals were added in wave 4 and wave 9, respectively	5,477 individuals were added in wave 11
Information	It collects information about household structure, individual attributes, academic background, employment/ education status, distribution of living hours, matters related to cohabitation with parents, etc.	It collects information about economic and subjective well-being, labour market dynamics and family dynamics. Special questionnaire modules are included with each wave and covered topics such as wealth, retirement, and fertility intentions

A2: Descriptive statistics, HILDA Survey

	Men				*Women*			
Variable			*Per cent*				*Per cent*	
Employment status at t	Not employed, unemployed		12.82		Not employed, unemployed		27.12	
	Self-employed		18.06		Self-employed		8.91	
	Fixed-term or casual employment		15.21		Fixed-term or casual employment		21.07	
	Permanent or ongoing employment		53.91		Permanent or ongoing employment		42.90	
Employment status at t-1	Not employed, unemployed		12.71		Not employed, unemployed		27.03	
	Self-employed		17.71		Self-employed		9.03	
	Fixed-term or casual employment		15.88		Fixed-term of casual employment		20.24	
	Permanent or ongoing employment		53.70		Permanent or ongoing employment		43.70	
Employment status at 1	Not employed, unemployed		14.02		Not employed, unemployed		29.58	
	Self-employed		15.64		Self-employed		7.97	
	Fixed-term or casual employment		19.57		Fixed-term of casual employment		25.07	
	Permanent or ongoing employment		50.77		Permanent or ongoing employment		37.37	
	Mean	*Standard Deviation*	*Minimum*	*Maximum*	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Age30_39	0.233	0.423	0	1	0.243	0.429	0	1
Age40_49	0.295	0.456	0	1	0.296	0.457	0	1
Age50_59	0.263	0.440	0	1	0.263	0.440	0	1
Married	0.680	0.467	0	1	0.679	0.467	0	1
Children0_3	0.131	0.338	0	1	0.139	0.346	0	1
Children4_6	0.110	0.313	0	1	0.129	0.336	0	1
Degree	0.246	0.431	0	1	0.285	0.451	0	1
Diploma	0.093	0.291	0	1	0.102	0.303	0	1
Certificate	0.294	0.456	0	1	0.164	0.371	0	1
Regional unemployment rate	5.199	1.114	2.3	9.4	5.338	0.804	2.1	8.6
Number of observations	47,261				53,281			

A2: Descriptive statistics, KHPS

	Men				*Women*			
Variable				*Per cent*				*Per cent*
Employment status at t	Not employed, unemployed			1.92	Not employed, unemployed			26.17
	Self-employed			21.58	Self-employed			15.69
	Fixed-term or casual employment			4.03	Fixed-term or casual employment			20.15
	Permanent or ongoing employment			72.48	Permanent or ongoing employment			37.99
Employment status at t-1	Not employed, unemployed			2.06	Not employed, unemployed			27.21
	Self-employed			21.42	Self-employed			15.88
	Fixed-term or casual employment			3.95	Fixed-term or casual employment			19.05
	Permanent or ongoing employment			72.58	Permanent or ongoing employment			37.86
Employment status at 1	Not employed, unemployed			2.27	Not employed, unemployed			31.06
	Self-employed			20.84	Self-employed			16.84
	Fixed-term or casual employment			4.78	Fixed-term or casual employment			15.2
	Permanent or ongoing employment			72.11	Permanent or ongoing employment			36.89
	Mean	*Standard Deviation*	*Minimum*	*Maximum*	*Mean*	*Standard Deviation*	*Minimum*	*Maximum*
Age30_39	0.246	0.431	0	1	0.266	0.442	0	1
Age40_49	0.325	0.468	0	1	0.335	0.472	0	1
Age50_59	0.356	0.479	0	1	0.312	0.463	0	1
Married	0.788	0.409	0	1	0.769	0.422	0	1
Children0_3	0.131	0.337	0	1	0.121	0.326	0	1
Children4_6	0.120	0.325	0	1	0.113	0.316	0	1
Degree	0.389	0.488	0	1	0.156	0.363	0	1
Diploma	0.076	0.265	0	1	0.262	0.440	0	1
Regional unemployment rate	4.518	0.881	2.9	6.6	4.019	0.739	2.4	5.8
Number of observations	7,198				7,570			

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Does Employment During Adolescence Reduce Adult Welfare Participation?

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Abstract

This study is the first to use welfare participation to investigate the impact of working during adolescence on outcomes later in life. I use National Longitudinal Survey of Youth (NLSY) 1979 data to investigate the impact of early-life employment on both the welfare payment and probability of welfare participation in the respondents' 20s and 30s. I use a variety of model specifications, including random effect and Heckman selection models, to check the robustness of the results. The study shows that the impact is generated mainly from the hours worked during the ages of 17, 18 and 19. Working one extra full-time week per year between the ages of 17 and 19 reduces the probability of receiving welfare in the 20s by 8.2 per cent (2.5 percentage points) for females and 10.9 per cent (2 percentage points) for males.
Keywords: Adolescent employment, Welfare participation, Human capital

JEL: J01, J08, H53

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I am indebted to Professors Charles Baum and Michael Roach at Middle Tennessee State University for their valuable suggestions and comments, which have been helpful in improving the analysis.

1. Introduction

Previous research that has investigated the impact of working during adolescence on future outcomes has focused on the employment channel: after high school, adolescents start to work in the same companies where they held entry-level positions during their high-school years (Mortimer, 2003). Therefore, adolescent work experience matters for adult employment. However, with the decline in industry jobs, the character of adolescent employment has changed. Retail and service jobs are now most common for high-school students, and there is little expectation that these jobs will convert into an adult career. Increasingly, there is a lack of overlap between high-school employment and adult work. Consequently, the employment channel of youth employment declines in importance. In fact, the future wage premiums associated with working during the senior year of high school have declined dramatically over the past 20 years (Baum and Ruhm, 2014).

Studying two cohorts from the WWII and baby-boomer generation, Aronson *et al*. (1996) found that the differences between these two cohorts in the types of jobs held by adolescents matter less than the psychological growth obtained through adolescent work. This finding points toward a very different channel of adolescent work and adult labour market outcomes. What appears to matter for adolescents is not the experience gained in job-specific human capital, but exposure to an environment that is rather different from high school. Working allowed adolescents to gain self-confidence, self-sufficiency, discipline, motivation, accountability, interpersonal skills, and, most of all, responsibility (Aronson *et al*., 1996); these psychological traits were found to be lower on average for people who are receiving welfare (Bruce and Waldman, 1991).

I argue that the development of these psychological traits, rather than any job-specific skills, is the key outcome of working during adolescence. I further suggest that participation in welfare programs later in life is driven by the same psychological dimensions. This study claims that welfare participation later in life is reduced by working during adolescence, as the various dimensions of psychological growth that Aronson *et al*. (1996) found are lower for welfare recipients (Bruce and Waldman, 1991).

This study is the first to use welfare participation to test the hypothesis that work in adolescence is beneficial in developing decision-making skills and discipline, which in turn lay the groundwork for accumulating human and social capital. The key hypothesis is that this capital will eventually work as a barrier to participation in welfare programs later in life.

Previous research used work during the years of high school as an outcome variable to estimate the impact of employment during adolescence. Therefore, the sample included only people who remained in high school through to graduation. This study measures the impact of employment during adolescence, using work between the ages of 17 and 19 as an outcome variable; this allows the sample to include subjects who did not graduate from high school. Including these subjects should increase the representativeness of the sample, as welfare recipients include a significant number of people who did not graduate from high school.

Using data from the National Longitudinal Survey of Youth (NLSY) 1979 and a variety of model specifications, including random effect and Heckman selection models, the study finds a negative impact of early-life work experience on the likelihood of participating in a welfare program later in life. In particular, working one extra full-time week per year between the ages of 17 and 19 reduces the probability of respondents receiving welfare in their 20s by 8.2 per cent (2.5 percentage points) for females and 10.9 per cent (2 percentage points) for males. There is no evidence of an impact on welfare receipts in the respondents' 30s.

This study has direct policy implications: it suggests that moderate employment during adolescence may be instrumental in accumulating social and human capital that can help to reduce welfare participation later in life.[1] Hence, implementing new policies that promote early work for youth to accumulate human capital and work experience, similar to the *Career Education Incentive Act (1977)* or *School-to-Work Opportunities Act (1994)*, would be beneficial, worth the investment and, to some extent, a partial remedy to the problem of welfare.

Section 2 of this paper provides a brief literature review, section 3 explains the data and discusses summary statistics, and section 4 presents the identification strategy and the problem of omitted variables. Section 5 interprets the regression estimates, section 6 checks for robustness of the baseline results, and section 7 provides conclusions.

2. Background

I assume that the take-up of welfare programs later in life indicates the impact of early-life employment on developing social and human capital. Central to this assumption is the fact that welfare enrolment is not automatic or by default. Applicants must fill out long application forms and go through lengthy procedures of income verification, interviews and, in some cases, third-party verification. For some programs, applicants are required to attend a series of meetings before they were permitted to sign their application forms (Andrews and Gabor, 2003).

Currie (2004) documented the take-up of a variety of programs. In 1994, only 69 per cent of eligible households participated in the Food Stamps Program, 75 per cent participated in the Women, Infants, and Children (WIC) Program, 87 per cent in the National School Lunch Program, between 8 and 14 per cent in the State Children's Health Insurance Program, and 15 per cent in the Child Care Subsidy Program. Blank (2001) estimated the take-up rates over time of Aid to Family with Dependent Children (AFDC) among families with female heads. The take-up rates ranged from 60 to 70 per cent when she used Current Population Survey (CPS) data, and 80 to 90 per cent when she used administrative data. Moffitt (2003) showed that Temporary Assistance for Needy Families (TANF) participation rates over time for poor single mothers was between 40 and 55 per cent.

1 The federal spending on welfare programs has reached $370 billion in FY 2014. This includes $60 billion on Earned Income Tax Credit (EITC), $21 billion on Child Tax Credit, $16 billion on Temporary Assistance for Needy Families (TANF), $54 billion on Supplemental Security Income (SSI), $70 billion on food stamps (currently known as SNAP), and $47 billion on housing assistance.

Rational choice theory suggests that people will not take up welfare if the costs outweigh the benefits (Abell, 2003). The cost is increased by a person's sensitivity to stigma, and by a greater stock of responsibility, independence, self-esteem, and other positive psychological and personal aspects, characteristics which this paper suggests may be boosted by early-life employment. Blank and Ruggles (1996) and Daponte *et al*. (1999) showed that participation in AFDC and the Food Stamps Program increased with the size of the benefits people were eligible for, suggesting an existing influence of transaction costs and stigma. Furthermore, participation rates in WIC declined in response to the requirement for income documentation (Brien and Swann, 1997), more frequent visits to the WIC office (Bitler *et al*., 2003), and the restriction of some types of food (Bonuck *et al*., 2002). Self-selection also extends to housing assistance: Reeder (1985) found that the poorest households are less likely than their relatively better-off counterparts to live in public housing.

There is a lack of consensus among researchers about the impact of early-life employment on future outcomes, which is a piece of evidence that the employment trajectory does not fully capture the multidimensional impact of early-life work. While some research has concluded that early-life employment has a positive effect on future wages and job stability, other research has concluded that it promotes pseudo-maturity, lack of adequate investment in human capital, and usage of alcohol and drugs that leave individuals with negative effects for their future income.

Low wages are correlated with, but not endogenous to, welfare participation. Larner and Page (1997) argued that movement in and out of a welfare program is determined more by changes in family structure than by fluctuations in income. They found that, in 1983, 45 per cent of new welfare recipients had recently divorced or separated, and another 30 per cent were unmarried new mothers. Only 15 per cent of new AFDC recipients enrolled because the family's earnings had decreased. Conversely, families left AFDC when they married or when the youngest child turned 18. Of people who left AFDC, less than half did so because they became employed.

Low wages do not necessitate welfare participation. For example, an individual earning the minimum wage would be less likely to qualify for a welfare program if he/she works two jobs or has fewer children. Furthermore, mothers who show a sense of independence often work while raising their children. Aronson (1998) investigated young women's transitions from adolescence to adulthood, and argued that women who appreciate their independence, self-reliance, freedom, equality, and self-fulfillment are more likely to combine work with motherhood.

Therefore, this study suggests that welfare participation is influenced by many of the psychological traits that are outcomes of working during adolescence; furthermore, that these traits also affect welfare participation through take-up and family structure.

Investigations into the impact of work during adolescence on educational attainment and employment outcomes has mixed results. Surprisingly, some research found that the impact is negative on educational attainment yet positive on adult employment. Brody *et al*. (1996) found a positive impact of working during high school on employment a decade later, if the individual obtained a bachelor's degree after school; however, they found a negative impact on educational attainment for

people who worked during high school. Greenberg *et al*. (1982) considered the impacts of working during high school in 10th and 11th graders in southern California, and found a negative impact on educational achievement and increased delinquency, yet a positive impact on knowledge of business. Other research has found an improvement in academic achievement in response to working a moderate number of hours during high school (Turner, 1996), working less than 20 hours per week (Steel, 1991; D'Amico, 1984; McCartin *et al*., 1985), and working between one and ten work hours per week for vocational high-schoolers (Lillydahl, 1990). Stephenson (1981), using NLSY data for interviews with young men between 1966 and 1971, found a positive impact of full-time employment during high school. Other research identified a positive impact of working during high school on academic performance and future employment in the form of lower unemployment rates and higher wages (Stern and Nakata, 1989). Baum and Ruhm (2014) found a positive impact among women of working during high school on subsequent employment for the five to 11 years after high-school graduation; after this, there was a dramatic decline.

Some research has also shown evidence of a negative impact of early employment on educational attainment. Singh (1998), using NLSY data, found a significant negative impact on standardised test scores for math, English, science, and social studies; he also found an increase in the likelihood of receiving lower grades, even if the high-schooler only worked part time. In his study on 2000 high-school students from upstate New York, Barone (1993) identified a small negative effect of employment during high school on Grade Point Average (GPA).

In addition to the impact of working in early life on educational attainment and future employment, there is also substantial literature on the impact of early-life work on the development of human and social capital. Early-life part-time employment is crucial in developing responsible adolescents (Greenberger, 1988). Early-life employment promotes autonomy and financial awareness and increases responsibility, maturity, and self-confidence (Mihalic and Elliott, 1997). Hareven (1982) observed independence and self-recognition in working adolescents as a result of gaining privileges like staying out late (for boys) or putting up hair (for girls). Moreover, even if the teenagers turn their earnings over to their parents, they are still able to buy a new suit or a new dress. Adolescents in the Great Depression era, who contributed to their families through paid work, gained confidence and feelings of efficacy from being able to help at a time of crisis (Elder, 1999). Mortimer and Finch (1986), Mortimer (2003), and Steel (1991) found that working during high school has a positive impact on self-reliance, self-image, time management skills, related control orientation, identity, perseverance, and confidence in being able to achieve economic goals. Holland and Andre (1987) find that early-life work is associated with the total development of students and promotes a transition from adolescence to adulthood. Early-life work also provides the opportunity to obtain social capital, which is important for building networks and relationships for social support (Coleman, 1990).

This study extends the literature by analysing the impacts of early-life work experience on future outcomes, using welfare participation as the outcome variable. The results suggest that such an impact is implemented through socialisation and psychological development, which promote self-esteem, responsibility, sensitivity to

stigma, and skills of judgment and decision making. I argue that moderate exposure to the work environment at a young age, specifically at ages 17, 18 and 19, is beneficial, in that it develops psychological traits, social capital and human capital. These skills promote discipline and improve decision making, resulting in a reduction in welfare participation.

3. Data

Data are from the National Longitudinal Survey of Youth (NLSY) 1979, a US nationally representative sample of 12,686 men and women who were between the ages of 14 and 22 when first surveyed in 1979. These individuals were surveyed annually until 1994 and biannually after 1994. The survey includes detailed questions on educational attainment, high-school test scores, Armed Forces Qualification Test (AFQT) scores, Armed Services Vocational Aptitude Battery (ASVAB) test scores, income and assets, number of children, alcohol and substance abuse, parental information, sexual activity, and marital and fertility histories. Additional labour force data includes hours worked, earnings, occupation, industry, benefits, and other specific job characteristics.

The key explanatory variable is the number of full-time (40 hour) weeks worked per year from age 17 to 19. This variable is calculated by collecting the hours worked for each individual in early life, calculating the average by dividing the work hours by the number of years worked, then dividing the quotient by 40 (the number of hours in a full-time working week). The average number of full-time working weeks per year in early life is 16.50 weeks; a typical female worked 14.75 full-time working weeks per year, compared with 18.00 for a male. The NLSY data also includes the number of weeks an individual worked since the last interview, regardless of the number of hours worked in the weeks. These data are used in the robustness check; the average number of weeks an individual worked in early life was 23 weeks per calendar year.

Welfare data were surveyed by asking the individual whether he/she or a spouse received income from food stamps, AFDC, Supplemental Security Income (SSI), TANF, rent subsidy, or any other public assistance. Data include the average amount of welfare received in the calendar year, and the months they were received, since the last interview. NLSY data on welfare participation are used to extract the key outcome variable, which is the total welfare received. Total welfare received consists of the amount of AFDC, food stamps, SSI, or any other public assistance/ welfare the individual received during the calendar year, excluding unemployment compensation. For the sake of robustness, I use food stamps and AFDC instead of total welfare receipts to measure the effect on two of the main components that comprise total welfare receipts. To calculate the probability of welfare participation, I create a binary variable that equals one if the respondent receives any welfare assistance during the calendar year and zero otherwise. After adding all the covariates and considering missing values, the final sample consists of 1,527 respondents. Of those, 366 individuals received welfare in their 20s and 340 received welfare in their 30s.

Table 1 displays a wide set of variables which the analyses used to control for the variation across individuals; these variables represent demographic characteristics, cognitive ability, various aspects of individual characteristics, and family background.

The data show that more people in the sample received welfare in their 20s than in their 30s. That could be partially explained by the passage of the *Personal Responsibility and Work Opportunity Reconciliation Act (1996)* (PRWORA) at a time when respondents in the sample were nearing the age of 30, or by the economic boom in the late 1990s, or by a combination of both of these factors. Moreover, the probability of receiving welfare was higher in the second half of the respondents' 20s than in the first half. Respondents who worked more hours in their early life received fewer welfare payments in their 20s (Fig. 1); this negative correlation persisted, albeit weaker, in their 30s (Fig. 2).

On average, females received greater sums of welfare than males. In the sample, 30 per cent of the females and 18 per cent of the males received welfare payments in their 20s, with an average of $4,157 per year for females and $4,855 per year for males. Fewer respondents received welfare in their 30s: 18 per cent of females in their 30s received welfare, with an average receipt of $4,011 per year, compared with 11 per cent of males with an average receipt of $3,705 per year.

In every age group, the average male worked more hours and more weeks than the average female. A 19-year old male worked an average of 31 full-time working weeks, whereas a 19-year old female worked an average of 25 full-time working weeks. Most respondents who graduated from high school when they were 18 years old. In the sample, 61 per cent of high-school graduates graduated at the age of 19 or earlier; more than half of those graduated from high school at the age of 18.

Table 2 shows the percentage of welfare participants and welfare payments by age group, gender, and early-life full-time working weeks. In general, males tended to work more hours than females; for all age groups, a higher percentage of males worked more than 20 full-time working weeks, while a higher percentage of females did not work (i.e., zero working weeks). Females were more likely to receive welfare, and on average they received greater welfare payments than their male counterparts. Table 2 presents an insight into the positive role that early-life employment plays in reducing the likelihood of receiving welfare, and the sums of welfare payments received. In the age group 17–19, an increase in the number of full-time working weeks lowered the percentage of respondents who received welfare in their 20s. Furthermore, the level of payments declined significantly with the number of full-time working weeks.

Table 3 shows summary statistics for some of the covariates. Females comprise 48 per cent of the final sample. Ninety-four per cent of the individuals in the sample graduated from high school, 38 per cent postgraduate degrees, 24 per cent bachelor degrees, and only seven per cent obtained a graduate degree. Approximately the same percentage of females and males graduated from high school, yet more females than males attained postgraduate, bachelor, and graduate degrees. Nine per cent of the sample received welfare before the age of 18. This applies to more females than males.

4. Methodology

I use a variety of model specifications, including ordinary least square (OLS), probit, random effect, and Heckman selection models. The basic model controls for a wide set of covariates that represent demographics, personal characteristics, proxies for cognitive ability, and family background. The basic equation is:

$$y_{it} = \alpha h_i + \beta h_i^2 + \gamma x_{it} + \epsilon_{it}$$

where y_{it} is the outcome variable, which is welfare receipts for individual i at time t. Each t represents a calendar year from 1979 to 2012. The welfare payments are those received by respondents while in their 20s or 30s. The key explanatory variable h is the average number of full-time working weeks an individual worked in early life. Respondents who were 17 years old by 1979 were interviewed in 1980; the number of hours they reported in 1980 represents the number of hours they worked at the age of 17. Likewise, the number of hours that they reported in 1981 to have worked since the last interview represents the number of hours they worked at the age of 18, and so on. A variable of squared hours is added to the regression to allow for a nonlinear impact of the early-life work on welfare participation. A set of controls for demographics, personal characteristics, cognitive ability, and family background for individual i at time t is represented by x_{it}. The error term is ϵ_{it}. The coefficients of interest are α and β; the standard error for each parameter is reported separately. The probability (P value) for the hypothesis that both parameters α and β are equal to zero is reported using an F-test or a likelihood ratio test.

Family and individual characteristics that we are unable to observe in the data could affect both early-life employment and future welfare participation. A family that fosters responsibility and self-dependence would positively affect their children's early-life employment and welfare participation in the future, causing upward bias, leading to a greater effect for early-life employment. An individual with a family background of poverty is expected to work more hours in his/her early life and is more likely to receive welfare in the future; that would cause a downwardly biased result. An individual's distaste for school or preference to work could also bias the results. I use a wide set of covariates to control for the variation across the respondents. These variables represent demographic characteristics, cognitive ability, various aspects of individual characteristics, and family background (Table 1). I also use random effect and Heckman selection models to minimise the bias and to check the robustness of the results.

5. Estimation Results

The results in Table 4 show a negative effect of working during adolescence on welfare receipts when respondents are in their 20s. This result is robust across a variety of specifications. The effect becomes smaller as one moves from model (a), with no controls, to the full model (e), in which covariates for demographic, personal characteristics, cognitive ability, and family background are included. For the average male who worked 18 full-time working weeks per year during adolescence, working

one extra full-time working week per year results in a reduction in welfare receipts in his 20s of $23 (-46.77+2*0.66*18); this is a reduction of 11 per cent from the average welfare receipts for a male in his 20s of $209. The impact on the welfare receipt for females in their 20s was statistically insignificant. The reduction in the average welfare received per year by a female in her 30s is $19 (-56.03+2*1.25*14.8); this is a reduction of 6.6 per cent from the average welfare receipts for a female in her 30s of $288. The impact is statistically insignificant for males in their 30s. A dwindling effect in the respondents' 30s could be partially explained by the passage of the PRWORA in 1996 (when the respondents in the sample were nearing 30 years of age), or by the economic boom in the late 1990s, or by a combination of both. However, investigating these issues is beyond the scope of this paper.

The diminishing marginal impact for early-life employment is evident in the literature, e.g., D'Amico (1984), Turner (1996), Lillydahl (1990), McCartin *et al.* (1985), and Steel (1991). This study makes a comparable finding, as welfare receipts declined in response to an increase in the hours worked during adolescence, until the number of full-time working weeks per year reaches the threshold of 35 (46.77/(2*0.66)) for males and 22 for females.

There were no significant effects from working at the ages of 14, 15, and 16; therefore, I only present the results from working during the ages of 17, 18, and 19 (Table 5) and from working during sophomore, junior, and senior years of high school. Working at the ages of 18 and 19 has a significant impact on the welfare receipts for male respondents in their 20s, causing an average reduction of $10.60 and $17.00 per year, respectively. Working one extra full-time week at the age of 18 reduces the welfare payments for females in their 20s by $9.00. Breaking down the impact of hours worked by age or high-school year shows no evidence of an effect of these on the welfare received by either males or females in their 30s (Table 5). Fifty-two per cent of the respondents in the final sample graduated from high school at or before the age of 19; another 39 per cent graduated from high school after the age of 19, while they were already working. This reduces the variation and contributes to the lack of a significant impact of hours worked as a function of high-school year on welfare participation.

Table 6 shows the results from probit regressions. The dependent variable is dichotomous: it equals one when the respondent receives a welfare payment in a specific year and zero otherwise. The results of the probability model in Table 6 are comparable to those of the OLS results in Tables 4 and 5. Working in early life reduces the likelihood of males receiving welfare in their 20s. The impact is statistically significant across all specifications. For an average male, working an extra full-time working week per year in early life reduces the likelihood of receiving welfare by 4.2 and 4.0 percentage points when they are in their 20s and 30s, respectively. The likelihood of receiving welfare for men is highly affected by working at the age of 19. For males, working an extra working week at the age of 17, 18, and 19 reduces the probability of welfare participation in their 20s by 2.1, 1.9, and 2.2 percentage points, respectively. The impact is statistically significant for females in their 30s: working an extra full-time working week per year in early life reduces the probability of receiving welfare by 5.6 percentage points, a finding that is comparable to the OLS results in Table 4.

The results of this study are consistent with the hypothesis that working during adolescence develops discipline and psychological barriers that limit people from participating in public assistance programs later in life. However, the data do not allow the analysis to investigate the characteristics in which the development occurred; furthermore, investigating these psychological aspects is beyond the scope of this study. Another limitation of this study is the use of US data, which represent only the US population; this shortcoming restricts the scope to generalise from the findings. Future research will consider using data from a variety of countries.

6. Robustness Check

In order to check the robustness of the results, I use a variety of model specifications, including random effect and Heckman selection models. Furthermore, I estimate the impact of working during adolescence on two of the most important components of welfare in the US: food stamps and AFDC. The study also employs the number of working weeks during adolescence, instead of the number of full-time working weeks. An instrumental variables approach was attempted, but finding strong instruments in the data set was a challenge; nevertheless, the results that were obtained by using the available instruments supported the conclusion of the other models.

Selection Bias

Not everyone who is eligible for welfare chooses to receive it; therefore, welfare participation is not observed for all who are eligible. Individuals vary in their perception of the costs and benefits of participating in a welfare program. Factors like sensitivity to stigma, responsibility, self-esteem, self-recognition, and other psychological and personality characteristics affect peoples' decision of whether to participate. Therefore, they may choose not to take up benefits even if they are eligible. I use the Heckman selection model to treat the selection bias caused by welfare take-up and to account for the unobserved eligible participants who opt not to participate. The selection is the choice of whether to receive welfare in their 20s. A probit regression that includes three covariates that predict welfare participation was first conducted. These three predictors are excluded from the second regression.

The three covariates predicting the probability of receiving welfare are: (a) Expected work in which individuals were asked in the first survey whether they want to work, marry, raise a family, or other before age 35. (b) Rosenberg score: individuals were to respond to specific types of questions about self-esteem in the 1980 survey, such as 'I am a person of worth.' Responses were scored from 0 to 34 and grouped into seven categories based on their scores. (c) The reason the person left school (see Table 1 section 2 - Individual Characteristics).

The inverse Mills ratio is calculated from the first probit regression and incorporated as a covariate to the second OLS regression.[2] The outcome variable in the first regression is a binary variable indicating whether the respondent did or did not receive welfare payments in a particular year. The inverse Mills ratio coefficient indicates the selection effect on welfare participation. A statistically significant positive coefficient implies that the parameter estimates from the reduced-form models, which do not control for the endogenous selection, are upward biased.

Table 7 shows results of various regressions using OLS and the Heckman selection model. For robustness, food stamp payments and AFDC are used in addition to the total welfare payment. The AFDC program was replaced by TANF in the act of 1996; however, available data on AFDC made it possible to take a further look at the impact on various welfare components. The insignificant effect on AFDC is explained by attempts by the states of the US to substitute the AFDC, which is only 50 per cent funded by the federal government, with the food stamp program, which is fully funded by the federal government. Because it was fully funded by the federal government, the food stamp system was a disincentive for states to increase their AFDC contributions. Consequently, states imposed a higher income threshold to qualify for AFDC than for food stamps.

The results of the Heckman selection model in Table 7 show a larger effect of early-life work on welfare participation in the future, because the model accounts for those who choose not to participate due to stigma or other cost elements that outweigh the benefits. This finding conforms to the take-up argument in the literature. Working one extra full-time working week per year in early life reduces the total annual welfare payment and food stamps received by the respondents in their 20s by $22.30 and $5.00, respectively. The Heckman selection model shows a larger effect than the OLS model: working an extra full-time working week is associated with a reduction of $34.50 and $12.80 for welfare and food stamps payments per year, respectively. While the effect on AFDC payment is statistically insignificant using the OLS model, accounting for the selection bias shows a yearly reduction of $14.00.

Working at the age of 18 leads to the largest reduction in both welfare receipt and food stamps. The impact on welfare receipt is a reduction of $12.50 using OLS, and $19.70 using the Heckman selection model; for food stamps receipts, the reduction is $2.30 using OLS, and $6.30 using the Heckman selection model. Working at the ages of 17 and 19 also has a statistically significant effect on welfare receipts, with reductions of $11.00 and $10.00 respectively using OLS, and a reduction of $15.50 for both ages using the Heckman model. Food stamp receipts are also affected by working between the ages of 17 and 19. For people working at the ages of 17 and 19, the Heckman selection model indicates that one extra full-time working week caused a reduction in receipt of food stamps by $5.10 and $5.80, respectively. The effect on

2 The inverse Mills ratio (IMR) is $\varphi(p) / \Phi(p)$ where $\varphi(p)$ is the standard normal density function, and $\Phi(p)$ is the cumulative density function of the fitted values of the first probit regression. The IMR from the first regression was used as a covariate in the second regression. The IMR in the second probit regression produced statistically significant coefficients (Tables 7 and 9), which indicates the presence of selection bias. The three variables that are used to predict the probabilities in the first model are excluded from the second model. For further information, see Heckman & Vytlacil (2003) and Genton & Marchenko (2012).

AFDC is only statistically significant for work at the age of 18, with the Heckman model showing a reduction of $8.00 in the AFDC receipts per year.

Using the Heckman selection model, the study accounts for subjects who were eligible yet chose not to participate in a welfare program. As expected, accounting for these people produced a higher effect. The model successfully predicts welfare participation through early-life psychological characteristics, providing evidence that sensitivity to stigma and other psychological traits influence the take-up rate of welfare programs.

Random Effect

To minimise the possible endogeneity between working in early life and welfare participation later in life, I use a large number of controls for individual characteristics and family background. However, to guard against spurious results, this study employs a random effect model. An individual-specific random variable that is uncorrelated with the explanatory variables is incorporated in the model.

The analysis in Table 8 uses a narrower age window in a random effect structure. The random effect models in Table 8 include only the full-time working weeks between the ages of 17 and 19. The results in Table 8 are comparable to the OLS results in Table 4; nevertheless, using a random effect approach that restricts the working age to between 17 and 19 produces a smaller yet statistically significant impact. Working one extra full-time working week per year in early life reduces the welfare payments received by the respondents in their 20s by $19.10 for females and $6.00 for males. The impact on welfare payments in their 30s was statistically insignificant for both males and females. Working one extra full-time working week per year in early life reduces the likelihood of respondents receiving welfare payments in their 20s by 2.5 and 2 percentage points for females and males, respectively.

Table 9 summarises the results of OLS, Heckman, and random effect models and presents them in dollar terms. The results for OLS have been previously discussed (Table 4): working one extra full-time working week per year in early life reduces welfare payments received by the respondents in their 20s by $20.00 for females and $22.80 for males. The Heckman selection model yields larger coefficients, as it accounts for subjects who were eligible yet did not participate in a welfare program. Using the Heckman selection model yields an insignificant impact for respondents in their 30s; however, working an extra full-time working week in early life reduces welfare payments in their 20s by $22.00 and $39.00 per year for females and males, respectively.

Using the random effect model to eliminate a possible remaining endogeneity yields smaller impacts on welfare received by respondents in their 20s and a statistically insignificant impact for respondents in their 30s; however, the results confirm the negative association between working during adolescence and the welfare received in later life.

For robustness, I use the average number of working weeks per year in early life, instead of the average worked hours, as a key dependent variable. Table 10 shows the impact of the number of working weeks on the welfare payments received by respondents in their 20s and 30s regardless of the number of hours worked per week. The results are consistent with the findings in Table 4, in which full-time working weeks are used as the outcome variable. The effect is highly significant for males in their 20s and insignificant for females in their 20s: for males, working an extra week per year in early life reduces the likelihood of receiving welfare payments in their 20s by 4.3 percentage points. Table 11 summarises the results in terms of dollars, percentage points, and percentage change.

7. Conclusion

Previous research has used educational and employment channels to estimate the impact of adolescents' employment on later life. However, this study highlights the shortcoming of using these channels and instead uses welfare participation as a future outcome to estimate the impact of early employment.

Using data from the National Longitudinal Survey of Youth (NLSY) 1979, and a variety of model specifications, including random effect and Heckman selection models, this study finds a significant impact of early-life work on welfare participation later in life. This impact is generated mainly from working at the ages of 17, 18 and 19, with the greatest effect arising from working at the age of 17. Working one extra full-time working week per year between the ages of 17 and 19 reduces the probability of receiving welfare by 2.5 percentage points for females and 2 percentage points for males in their 20s. There is also a reduction in the welfare received in the respondents' 20s of 7.5 and 2.2 per cent for females and males, respectively. The impact is economically and statistically insignificant in the 30s for both females and males.

This study provides evidence that work in adolescence is constructive in that it reduces the likelihood of future participation in a welfare program and the amount of welfare received. The study also suggests that this effect occurs through increasing the stock of human and social capital, which develops psychological barriers that promote discipline from participating in public assistance programs. Using the Heckman selection model, the study accounts for subjects who were eligible yet did not participate in a welfare program. The model successfully predicts welfare participation through early-life psychological characteristics, and provides evidence that sensitivity to stigma and other psychological traits influence the take-up rate of welfare programs.

By looking at the full-time working weeks reported based on the age of the respondent instead of high-school completion, this study is able to include both high-school graduates and subjects who did not graduate from high school. This increases the representativeness of the sample and addresses a problem not taken into consideration in previous research. Therefore, the analysis suggests that programs should be implemented that encourage students to work moderately during high school and college to develop human capital, social capital, and constructive personal characteristics.

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Table 1: Summary of the Covariates

Variables	*Description*
1-Demographics	
Gender	Male/Female
Ethnicity	Black/Hispanic/White
Region	West/South/Northcentral/Northeast
Age	The age of the respondent, 14 years old in 1979
U.S Born	Whether or not the respondent is born in the United States
U.S Citizen	Whether or not the respondent is a U.S citizen
Urban	Whether or not the respondent lives in an urban area
2-Individual Characteristics	
Rotter Scale	The respondents were asked questions during the first survey in 1979 to show their outlook towards life, their attitude towards work, and their determination towards achieving their goals. Respondents were asked questions such as what they think of the role of luck in their life or if they were able to make their plans work. Respondents are divided into four groups based on their score on the Rotter scale, 1 to 4, 5 to 9, 10 to 14, and 15 to 19.
Drug Usage	This variable represents the number of times the respondent used cocaine; it ranges from 0 to 7 times.
Reason Left School	Respondents were divided into 8 groups. The base group is respondents who left school for graduation. Other groups include those who left school for reasons of pregnancy or marriage, distaste for school or poorgrades, home responsibility, choosing to work, financial difficulty, military service, being expelled or suspended, the respondent considering school to be too dangerous, and other reasons.
Number of Spouses	This variable is the number of spouses/partners the respondent has ever had.
Married	This variable looks at whether or not the respondent is currently married.
Number of Children	This variable identifies the number of biological and adopted children in the household if any.
High School Club	This variable looks at whether or not the respondent participated in high school clubs.
Occupation Aspiration	In the first survey given in 1979, respondents were to choose what kind of work they would like to do at the age of 35. This variable includes 13 categories which represent different types of occupations which in turn control for a variety of personal characteristics. Categories include (I) professional, technical and kindred, (II) managers, officials and proprietors, (III) sales workers, (IV) clerical and kindred, (V) craftsmen, foremen and kindred, (VI) armed forces, (VII) operatives and kindred, (VIII) laborers except farm, (IX) farmers and farm managers, (X) farm laborers and foreman, (XI) service workers except private household, (XII) private household, and (XIII) none or don't want to work.

Table 1: Summary of the Covariates (continued)

Rosenberg Score	Individuals were to respond to specific types of questions about self-esteem in the 1980 survey such as 'I am a person of worth'. Responses were scored from 0 to 34 and grouped into 7 categories.
Number of Children Expected	Respondents were asked about the number of children they would like to have in the future.
Highest Grade Expected	Respondents were asked about the highest grade they expect to attain in the future.
Short Run Work Expectation	Respondents were asked whether or not they would like to work in the next five years. *In the initial Analysis, the previous individual characteristics data was collected in the first and second interviews when the respondents were 14 and 15 years old, creating an opportunity to control for early life characteristics.
Age at the First Illegal Activity Conviction	The minimum age at the first conviction was 9 years old while the maximum was 23. I divided the variable into 3 categories: whether or not the respondent was first convicted at or under the age of 18, above the age of 18, and the base category where the respondent was never convicted.
3-Cognitive Ability	
Test Scores	Test scores for 20 various courses were collected from high school transcripts. I calculated the standardized scores for each course to reduce variation across schools and regions.
Education Attainment	Dummy variables equal 1 when the respondent obtained a degree, such as high school, postgraduate degree, bachelor degree, and a master degree and up.
Age of High School Graduation	The age a respondent graduated from high school is represented by five binary variables: a binary for each group of age 15, 16, 17, 18, and 19.
4-Family Background	
Welfare Background	This variable investigates whether or not the respondent received welfare payment when he/she was at or less than 18 years old. Using welfare background as a covariate controls for the parents' financial status as data on the parents' income was unavailable. Also welfare background is expected to impact welfare participation in the future.
Language Spoken at Home	This variable looks at if another language other than English was spoken at home. The data includes four categories Spanish, French, German, and others.
Library Card	A dummy variable equals one if any of the household members have had a library card at the age of 14.
Mother's Highest Grade	This variable looks at the mother's highest grade completed.
Number of Siblings	This variable is the number of siblings the respondent has.

Table 2: Welfare Outcome by Age, Gender, and Early Life Full-Time Working Weeks

Age	*Full-Time Working Weeks*	*Percentage of Respondents*		*Percentage of Respondents Received Welfare in their Twenties*		*Percentage of Respondents Received Welfare in their Thirties*		*Welfare receipts in their twenties (Dollars per year)*		*Welfare receipts in their thirties (Dollars per year)*	
		Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
17 years old	0	21	28	37	54	23	31	617	1369	359	844
	1-10	22	21	21	39	12	20	207	799	190	448
	11-20	20	20.	17	22	13	11	145	330	231	207
	>20	35	30	18	22	11	11	103	386	205	271
18 years old	0	14	21	33	61	23	39	519	1741	621	1153
	1-10	17	21	34	37	17	18	368	835	226	407
	11-20	16	18	18	28	8	9	127	366	115	243
	>20	51	40	17	23	12	12	166	309	174	215
19 years old	0	14	16	31	66	21	38	550	2104	433	1077
	1-10	11	13	24	37	15	22	156	723	338	678
	11-20	13	16	25	32	13	13	489	712	330	527
	>20	63	53	20	26	13	14	149	338	163	217

Note: Welfare receipts are the average amount of welfare payments a respondent received per year in his/her twenties/ thirties.

Table 3: Summary Statistics

Variable	*Sample*	*Female*	*Male*
Welfare When Under 18	.098	.172	.028
	(.297)	(.378)	(.165)
High School	.942	.943	.941
	(.234)	(.231)	(.236)
Postgraduate degree	.377	.418	.339
	(.485)	(.493)	(.473)
Bachelor Degree	.239	.257	.221
	(.427)	(.438)	(.415)
Graduate Degree	.068	.079	.056
	(.251)	(.271)	(.231)
Female	.483	_____	_____
	(.499)		
Black	.234	.267	.204
	(.424)	(.443)	(.402)
Hispanic	.149	.135	.161
	(.356)	(.342)	(.368)
West	.212	.191	.231
	(.409)	(.394)	(.421)
South	.349	.373	.326
	(.477)	(.484)	(.469)
Northcentral	.305	.306	.303
	(.460)	(.461)	(.459)
Northeast	.135	.129	.140
	(.342)	(.335)	(.347)
Urban	.767	.748	.785
	(.423)	(.434)	(.411)
U.S Born	.963	.981	.946
	(.189)	(.137)	(.227)
U.S Citizen	.967	.985	.949
	(.179)	(.120)	(.219)
Number of Children	.586	.762	.422
	(.915)	(.984)	(.812)
Number of Siblings	3.335	3.529	3.153
	(2.440)	(2.787)	(2.049)
Mother Highest Grade	11.278	11.102	11.442
	(2.899)	(3.017)	(2.776)

Note: The numbers in parentheses are the standard errors.

Table 4: Regression Estimates of Full-Time Working Weeks (40hours) on Average Welfare Payments per Year Received by Respondents in their 20s/30s

Welfare Payment In The Twenties/ Thirties Per Year		*(a)*	*(b)*	*(c)*	*(d)*	*(e)*
Twenties						
Female	Hours	-100.121***	-81.596***	-49.023*	-38.364	-45.492
		(21.570)	(21.289)	(19.556)	(22.819)	(22.645)
	$Hours^2$	1.676	1.424	0.941	0.692	0.859
		(-0.555)	(0.539)	(0.495)	(0.555)	(0.548)
Male	Hours	-36.365***	-36.834***	-43.135***	-55.074***	-46.777***
		(11.453)	(11.287)	(12.467)	(17.624)	(18.482)
	$Hours^2$	0.555	0.563	0.581	0.795	0.664
		(0.223)	(0.218)	(0.244)	(0.355)	(0.371)
Thirties						
Female	Hours	-82.134***	-63.039***	-53.984*	-43.592	-56.025*
		(17.931)	(16.681)	(19.978)	(20.526)	(21.532)
	$Hours^2$	1.581	1.303	1.173	0.992	1.253
		(0.461)	(0.422)	(0.507)	(0.502)	(0.525)
Male	Hours	-26.126***	-24.402*	-29.469***	-14.036	-7.631
		(8.413)	(8.548)	(9.388)	(10.404)	(9.129)
	$Hours^2$	0.476	0.453	0.566	0.165	0.024
		(0.164)	(0.165)	(0.183)	(0.207)	(0.181)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Model (a) only includes the average full-time work weeks that respondent worked per week. Model (b) includes demographics. Model (c) includes individual characteristics variables. Model (d) includes cognitive ability variables. Model (e) includes all the previous variables plus variables representing family background. P-value is obtained by testing the hypothesis that hours and hours2 are jointly equal zero using F-test. The numbers in parentheses are the standard errors. The analysis used robust standard errors.

Table 5: Regression Estimates of Full-Time Working Weeks by Age/High School Grade on Average Welfare Payments per Year Received by Respondents in their 20s/30s

Welfare Payment in the Twenties / Year		*17 Years Old*	*18 Years Old*	*19 Years Old*	*Sophomore*	*Junior*	*Senior*	*Senior [c]*
Twenties								
Female	Hours	-16.136	-24.974*	-12.319	-25.991	-18.135	-11.932	-9.951
		(15.336)	(11.888)	(8.688)	(14.8026)	(18.3794)	(6.4890)	(8.3960)
	$Hours^2$	0.185	0.307	0.103	0.3085	0.4110	0.0281	0.0235
		(0.321)	(0.202)	(0.099)	(0.2410)	(0.4180)	(0.0302)	(0.0349)
Male	Hours	-20.808	-20.823*	-25.478**	-1.072	-0.659	-4.010	-6.305
		(10.339)	(11.326)	(8.240)	(5.205)	(6.368)	(4.260)	(6.338)
	$Hours^2$	0.203	0.201	0.229	-0.012	0.012	0.037	0.060
		(0.153)	(0.175)	(0.103)	(0.062)	(0.121)	(0.059)	(0.108)
Thirties								
Female	Hours	3.272	-11.677	-5.771	-25.868	-12.164	-5.086	-6.444
		(14.357)	(11.359)	(8.168)	(14.006)	(17.660)	(6.135	(7.853)
	$Hours^2$	-0.098	0.091	0.036	0.355	0.237	0.010	0.019
		(0.302)	(0.194)	(0.094)	(0.238)	(0.405)	(0.028)	(0.033)
Male	Hours	1.592	-2.302	-4.933	4.813	-2.581	-1.233	-1.162
		(5.077)	(5.651)	(4.049)	(4.892)	(6.071)	(4.114)	(5.993)
	$Hours^2$	-0.089	-0.016	0.021	-0.088	0.065	-0.004	-0.021
		(0.075)	(0.086)	(0.050)	(0.058)	(0.115)	(0.055)	(0.101)

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Worked hours are restricted by age. OLS is a full model where demographic, individual characteristics, cognitive ability, and family background are included. Senior c displays senior year's coefficient in a full model after controlling for hours worked in the sophomore and junior years. The numbers in parentheses are the standard errors. The analysis used robust standard errors.

Table 6: Probit Estimates of the Probability of Receiving Welfare by Respondents in their 20s/30s in Response to the Number of Full-Time Working Weeks Worked in Early Life

Probability Of Receiving Welfare In The Twenties / Thirties		*Full-Time Working Weeks In Early Life*	*Full-Time Working Weeks 17 Years Old*	*Full-Time Working Weeks 18 Years Old*	*Full-Time Working Weeks 19 Years Old*
Twenties					
Female	Hours	-0.015	-0.022	0.002	-0.010
		(0.039)	(0.025)	(0.022)	(0.016)
	$Hours^2$	0.000	0.000	-0.000	0.000
		(0.001)	(0.001)	(0.000)	(0.000)
	dy/dx	-0.013	-0.016	-0.007	-0.010
Male	Hours	-0.044	-0.025	-0.028	-0.025
		(0.028)	(0.015)	(0.019)	(0.016)
	$Hours^2$	0.000	0.000	0.001	0.000
		(0.001)	(0.000)	(0.000)	(0.000)
	dy/dx	-0.042***	-0.021*	-0.019**	-0.022***
Thirties					
Female	Hours	-0.175	-0.028	-0.015	-0.008
		(0.057)	(0.039)	(0.036)	(0.035)
	$Hours^2$	0.004	0.003	-0.001	0.000
		(0.001)	(0.008)	(0.007)	(0.006)
	dy/dx	-0.056***	-0.020	-0.021	-0.009
Male	Hours	-0.015	0.011	0.021	0.021
		(0.051)	(0.001)	(0.031)	(0.024)
	$Hours^2$	-0.001	-0.000	-0.000	-0.000
		(0.001)	(0.000)	(0.000)	(0.004)
	dy/dx	-0.041*	-0.004	0.003	-0.015

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. The dependent variable is dichotomous. In the case of estimating the impact on the twenties, this variable equals 1 for each year the respondent received welfare and zero otherwise. In the case of estimating the impact on the thirties, this variable equals 1 for each year the respondent received welfare and zero otherwise. dy/dx is the marginal effect at the mean. Models are fully specified as in model (e) in Table 4. The numbers in parentheses are the standard errors. The analysis used robust standard errors.

Table 7: Regression Estimates of Full-Time Working Weeks (40hours) by Age/ High School Grade on Welfare/Food Stamps/AFDC Payments per Year Received by Respondents in Their 20s

Welfare Payment in the Respondents' 20s / Year		*Welfare*		*Food Stamps*		*AFDC*	
		OLS	*Heckman Selection*	*OLS*	*Heckman selection*	*OLS*	*Heckman selection*
Hours worked (40hours) Early Life	Hours	-42.9***	-62.4***	-9.63*	-21.8***	-3.3845	-9.51*
		(13.1590)	(14.5890)	(3.8746)	(4.5836)	(8.4030)	(8.3854)
	$Hours^2$	0.6272	0.8475	0.1425	0.2737	-0.0170	-0.1452
		(0.2801)	(0.2820)	(0.0825)	(0.0840)	(0.1784)	(0.2000)
	IMR		432.41*		240.4***		290.69*
			(177.3520)		(63.7261)		(141.6901)
19 Years Old	Hours	-17.500***	-24.000***	-4.930*	-9.300***	-1.767	-6.460
		(5.575)	(6.089)	(2.120)	(1.909)	(4.595)	(4.490)
	$Hours^2$	0.132	0.151	0.048	0.061	-0.002	-0.000
		(0.067)	(0.066)	(0.031)	(0.019)	(0.068)	(0.042)
	IMR		393.920**		230.900***		184.892
			(178.281)		(63.830)		(135.509)
18 Years Old	Hours	-21.200***	-28.400***	-4.681	-7.500***	-9.373	-11.210*
		(7.784)	(7.978)	(2.974)	(2.395)	(6.427)	(5.308)
	$Hours^2$	0.198	0.196	0.053	0.026	0.112	0.072
		(0.123)	(0.123)	(0.051)	(0.036)	(0.112)	(0.077)
	IMR		500.800***		246.100***		223.878
			(186.923)		(65.228)		(135.049)
17 Years Old	Hours	-17.090*	-22.890*	-3.100	-7.260*	-4.455	-10.702
		(7.541)	(8.651)	(2.621)	(2.846)	(5.664)	(6.188)
	$Hours^2$	0.180	0.236	0.032	0.067	0.045	0.090
		(0.123)	(0.128)	(0.046)	(0.039)	(0.099)	(0.084)
	IMR		303.852		147.360*		206.264
			(173.354)		(60.451)		(137.418)

Note: * p < .05, ** p < .01, *** p < .001. Inverse Mill Ratio (IMR) from the first regression was used as a covariate in the second regression in the Heckman selection model. IMR is the inverse Mills ratio coefficient resulted from the second regression. Models are fully specified, as in model (e) in Table 4, excluding the three predictor variables and including the IMR in the caseof the Heckman selection model. The numbers in parentheses are the standard errors. The analysis used robust standard errors.

Table 8: Random Effect Model Estimates of Full-Time Working Weeks (40hours) on Welfare Payments per Year Received by Respondents in their 20s/30s

Welfare Payment and Probability of Receiving Welfare in the Respondents' 20s/30s		*Welfare Payment*	*Probability of Receiving Welfare*
Twenties			
Female	Hours	-30.933***	-0.041
		(6.762)	(0.011)
	$Hours^2$	0.402	0.000
		(0.105)	(0.000)
	dy/dx		-0.025***
Male	Hours	-6.885***	-0.021
		(2.716)	(0.012)
	$Hours^2$	0.024	0.000
		(0.037)	(0.000)
	dy/dx		-0.019***
Thirties			
Female	Hours	-11.193	-0.014
		(5.997)	(0.015)
	$Hours^2$	0.194	0.000
		(0.107)	(0.000)
	dy/dx		-0.006
Male	Hours	-3.929	-0.003
		(2.754)	(0.016)
	$Hours^2$	0.039	-0.000
		(0.037)	(0.000)
	dy/dx		-0.007

Note: Models are fully specified as in model (e) in Table 4. The numbers in parentheses are the standard errors. The analysis used robust standard errors.

Table 9: Estimates in Dollars of Full-Time Working Weeks on Welfare Payments per Year Received by Respondents in Their 20s/30s

Welfare Payment in the Twenties / Thirties per Year	*OLS*	*Treatment Effect*	*Random Effect*
Twenties			
Female	-$20.05	-$22.19	-$19.10***
Male	-$22.87***	-$39.12***	-$6.02***
Thirties			
Female	-$18.93***	-$12.14	-$5.57
Male	-$6.77	-$1.65	-$2.53

Note: * p < .05, ** p < .01, *** p < .001.

Table 10: Regression Estimates of Working Weeks on Average Welfare Payments per Year Received by Respondents in their 20s/30s

Welfare Payment In The Twenties / Year		*Weeks Worked in Early Life*	*17 Years Old*	*18 Years Old*	*19 Years Old*	*Probability Estimates*
Twenties						
Female	weeks	-3.427	-14.065	-39.891*	-14.338	0.028
		(28.269)	(15.649)	(16.231)	(9.896)	(0.049)
	weeks^2	-0.206	0.185	0.621	0.121	-0.001
		(0.819)	(0.299)	(0.286)	(0.130)	(0.002)
	dy/dx					-0.011
Male	weeks	-61.630*	-22.460*	-20.950*	-51.400***	-0.010
		(26.874)	(12.451)	(13.883)	(16.585)	(0.038)
	weeks^2	1.289	0.229	0.199	0.705	-0.001
		(0.766)	(0.206)	(0.241)	(0.287)	(0.001)
	dy/dx					-0.043***
Thirties						
Female	weeks	-48.761	-7.311	-23.727	-4.183	-0.009
		26.752	14.662	15.741	9.391	(0.048)
	weeks^2	1.151	0.166	0.327	0.039	0.020
		(0.778)	(0.282)	(0.277)	(0.123)	(0.014)
	dy/dx					-0.031
Male	weeks	-13.905	5.950*	-2.934	-15.530*	-0.021
		(13.603)	(6.120)	(6.979)	(8.281)	(0.002)
	weeks^2	0.183	-0.177	-0.019	0.206	0.001
		(0.384)	(0.101)	(0.120)	(0.144)	(0.007)
	dy/dx					-0.017

Note: * p < .05, ** p < .01, *** p < .001. dy/dx is the marginal effect at the mean. Models are fully specified as in model (e) in Table 4. The numbers in parentheses are the standard errors. The analysis used robust standard errors.

Table 11: Random Effect/Probit Estimates of Full-Time Working weeks (17-19 years old) on Welfare Payments per Year Received by Respondents in their 20s/30s

Welfare Payment/probability In The Twenties / Thirties per Year	*Welfare payment*		*Probability of receiving welfare*	
	Payment	*Percentage*	*Percentage points*	*Percentage*
Twenties				
Female	-$19.10***	-7.53%	-2.50***	-8.20%
Male	-$6.02***	-2.16%	-2.00***	-10.90%
Thirties				
Female	-$5.57	-1.94%	-0.59	-4.52%
Male	-$2.53	-2.13%	-0.71	-6.16%

Note: * p < .05, ** p < .01, *** p < .001.

FIG. 1: Welfare Received in the Twenties Against the Average Full-Time Working Weeks in Early Life (Age 17-19).

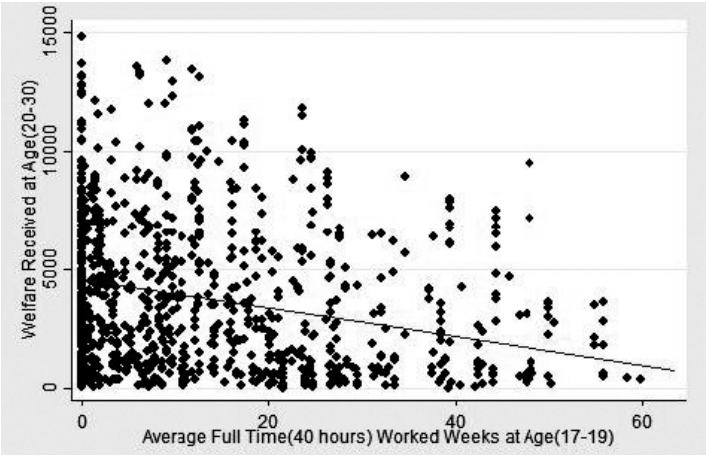

Figure 1 shows respondents who worked more hours in their early life received less welfare payment in their twenties.

FIG. 2: Welfare Received in the Thirties Against the Average Full-Time Working Weeks in Early Life (Age 17-19).

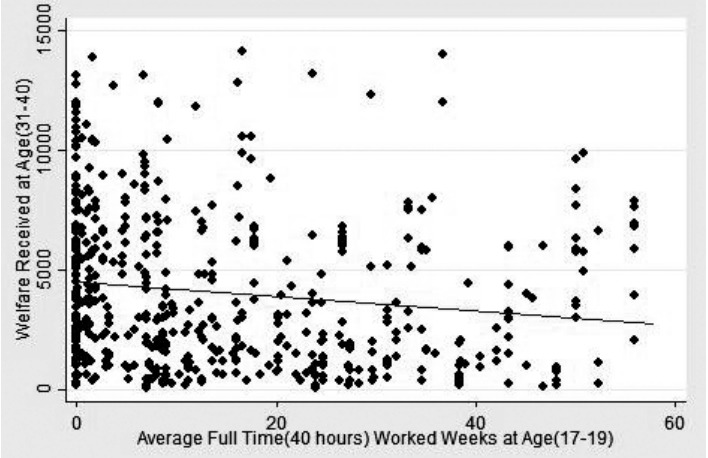

Figure 2 shows respondents who worked more hours in their early life received less welfare payment in their thirties.

Lessons from the Recent Policy Experience in the Australian Indigenous Community-Employment Sector

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Abstract

Indigenous disadvantage in Australia is persistent and includes continued low labour-force participation and employment, especially in remote areas. Government-driven employment programs respond by engaging (predominantly Indigenous) jobseekers in regional and remote Australia to improve outcomes. However, results have been mixed.

Much of the extant literature focuses on the Community Development Employment Program (CDEP)—Australia's longest-lasting community-employment program (1977–2015). There are comparatively few studies that focus on programs implemented since 2007, when CDEP began to be phased out, and no studies that trace this recent history in its entirety. This study fills this gap by exploring and comparing the key features of four employment programs from 2007 onwards—a period of relatively rapid program change. The paper discusses their key similarities and differences and argues that, despite rapid vicissitudes, the underlying policy settings remain largely stable. This offers some potential lessons for future policy approaches, which are particularly timely in the lead up to yet another new program being scheduled for implementation in early 2019.

EconLit Subject Descriptors: I3 Welfare, Wellbeing, and Poverty / J48 Particular Labor Markets: Public Policy / J6 Mobility, Unemployment, Vacancies and Immigrant Workers / J64 Unemployment: Models, Duration, Incidents and Job Search.

Keywords: Labour Economics; Labour Market Policy; Labour Market Regulation; Welfare; Wellbeing; Remote; Indigenous; Employment; Unemployment.

1. Introduction

Indigenous Australians continue to experience widespread social disadvantage, including in terms of labour-force participation and employment. They are still less likely than non-Indigenous Australians to be participating in the labour force and less likely to be employed, especially in remote communities (DPM&C, 2018). This is despite decades of employment programs, which have sought to improve outcomes for (primarily) Indigenous Australians living in regional and remote areas. These include the Community Development Employment Program (CDEP) (introduced in 1977), which continued for over 30 years, and four further programs, introduced between 2007 and 2015. In late 2017, the Commonwealth Government released a discussion paper inviting public comment on plans to create another new model—the sixth program in just over a decade (DPM&C, 2017a).

As the longest running Australian community employment program to date, much of the extant literature focuses predominantly on CDEP. Comparatively few studies explore the features of employment programs implemented since 2007 and of those that do, most tend to focus on one program at a time.

Although Fowkes (2011) did not focus specifically on remote Indigenous employment, she compared the key features of two programs introduced from 2007 to 2009 and argued that their fundamental policy objectives and frameworks were very similar. She argued that this meant both programs were unable to address fundamental underlying issues that substantially hindered progress. Since Fowkes' (2011) analysis, no similar studies could be found that consider whether this trend has continued. However, this is an important factor in informing future policy and program design. In the lead up to another new program being implemented in early 2019, it is timely to consider whether the recent program history indicates evidence of policy learning and improvement, or whether there remain underlying issues that are yet to be addressed. Unless programs are evolving and adapting to address fundamental structural and social barriers to remote Indigenous employment, there can be little hope that outcomes will improve.

This paper draws on publicly available literature to trace the full history of programmatic change in regional/remote Australia from 2007 onwards, when CDEP began to be wound up. It: 1) describes and compares the key characteristics of Australian employment programs[1] implemented during this time to determine their key similarities and differences; 2) considers available evidence of their outcomes and impacts; and 3) proposes some possible lessons from this recent history that build upon those previously offered by Fowkes (2011) and may help to guide future policymaking. The paper finds that Fowkes' (2011) argument about the similarities between the Job Network (JN) and Job Services Australia (JSA) is, seven years later, equally relevant to the Remote Jobs and Communities Program (RJCP) and the Community Development Program (CDP) and that fundamental underlying policy issues have still not been addressed. This has implications for future policy directions in this area, including the impending new employment program, scheduled to be implemented in early 2019.

1 This paper focuses specifically on the history and impact of employment programs for Indigenous jobseekers in remote contexts. It should also be acknowledged that there have been, during the time period covered here, other policies/programs also designed to impact employment.

Although this paper focuses on employment programs from 2007 onwards, because these programs and policies are deeply embedded in and informed by the previous 30 years of community-employment policy, it begins with a brief overview of CDEP. This is not intended to be exhaustive; there are many other accounts of the history, value and administration of CDEP in the existing literature (e.g. Altman and Gray, 2000, 2005; Sanders, 2004, 2012, 2016; Hunter and Gray, 2012; Jordan, 2016).

Setting the context

Programs from 2007 onwards were preceded by thirty years of program stability with CDEP, which was established by the Fraser Government in 1977. It was, at least partially, a response to concerns that the extension of unemployment benefits to Indigenous people living in remote communities (where local economies were weak and job opportunities were few) during the early 1970s would promote 'sit-down welfare' (Gray, Howlett and Hunter, 2014; Jordan, 2012; Sanders, 2012). Under CDEP, an amount roughly equivalent to unemployment benefits was provided in a lump-sum grant to each community (usually through the local council), which would then use the funds as wages to employ otherwise unemployed individuals in part-time 'work'.[2]

CDEP was gradually rolled out across Australia; at its peak from the late 1990s to 2004, there were around 35,000 participants overall, though this number had reduced to 10,692 by 2011 (Gray *et al.*, 2013). Though the outcomes and impacts of CDEP have been widely contested (e.g. Altman, Gray and Levitus, 2005; Hunter and Gray, 2012; Cape York Institute, 2007; Pearson, 2009), its ultimate demise was brought about on the (also highly contested) basis that it became a welfare 'pedestal' from which the long-term unemployed found it difficult to escape (Cape York Institute, 2007; Pearson, 2009; Department of Finance and Deregulation, 2009; Hockey in Uhlmann, 2007).

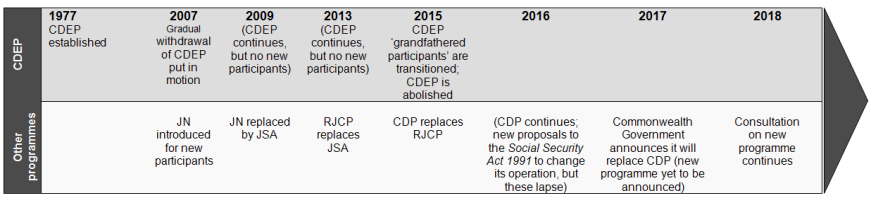
In a 2006 speech, then Minister for Families, Community Services and Indigenous Affairs, Mal Brough, set out what he called his 'blueprint for action in Indigenous affairs', which included a focus on economic development in remote areas and a nod to ensuring better management of mobility opportunities to facilitate jobseekers to take up employment beyond their communities. Later, in 2007, the Howard Government put into motion the gradual withdrawal of CDEP (Hockey in Uhlmann, 2007). This occurred against the backdrop of an increased focus on jobseeker obligations under the Working Nation (from 1994) and Welfare to Work agendas (from 2006), the latter of which increased activity and participation obligations attached to welfare payments (Jose and Burgess, 2005; Thomas and Daniels, 2010).

2 Later incarnations of the Program also included activity fees, participant payments, management fees and placement-incentive payments (Department of Finance and Deregulation, 2009).

2. Australian employment programs from 2007 onwards

The following sections describe the key characteristics, including delivery modes, funding structures and core program components, of each successive employment program from 2007 onwards. This includes the Job Network (JN), Job Services Australia (JSA), the Remote Jobs and Communities Program (RJCP) and the Community Development Program (CDP). As illustrated in **Figure 1**, these programs overlap and interrelate with CDEP from 2007 until it was completely discontinued in 2015.

Figure 1 Timeline of employment programs in remote Australia, 1977–2018



Job Network

JN was first introduced in 1998 to replace the Commonwealth Employment Service, which was abolished by the Howard Government in 1996 (Webster and Harding, 2008). The impetus was to create a quasi-privatised job-services sector, ostensibly to improve efficiency and outcomes (Webster and Harding, 2008; Wright, Marston and McDonald, 2011). From 2007, JN began to operate alongside CDEP in many areas (Altman, Gray and Levitus, 2005).

Thomas (2007) argued that, in its original format (1998–2003), JN was not much different from the previous Working Nation approach, which focused predominantly on providing job-search and job-link assistance. However, from 2003 onwards, an Active Participation Model was introduced, which increased the focus on jobseekers' mutual obligations (Thomas, 2007; DEEWR, 2007). The below sections document this latter version of JN because this is the model that existed when CDEP began to be rolled back in 2007.

The JN serviced around 724,700 jobseekers across Australia by 2006, including approximately 10.3 per cent (i.e. around 74,644) Indigenous jobseekers (DEEWR, 2007).[3] It set out to "…overcome the passivity and de-motivation that may develop with long-term spells of unemployment, remove other jobseeker-specific obstacles to employment and quickly orient benefit recipients to jobs" (Productivity Commission (PC), 2002, p. 2.4). It provided support around job placements, job search and training, and customised assistance/intensive support to jobseekers who were suffering greater disadvantage, or had been unemployed for longer (Thomas, 2007; PC 2002). These elements were offered through different programs, which operated under the JN strategy (e.g. 'Job Search Support', 'Job Search Customised Assistance', 'Work for the Dole') (Department of Finance and Deregulation, 2009). Most (≥90 per cent) Indigenous jobseekers received intensive customised assistance (DEEWR, 2002).

3 It is unclear what proportion of Indigenous jobseekers lived in remote or very remote locations.

Financial arrangements under JN included:

- outcome payments when a jobseeker stayed in employment for 13 and 26 weeks, or completed an education course for one or two semester/s[4],
- interim outcome payments when jobseekers commenced education, and
- fee-for-service payments for providing jobseekers with job-search training, as well as appointments and other services (Thomas, 2007; Australian National Audit Office (ANAO), 2009).

A jobseeker account could also be drawn on to reimburse providers for costs accrued when assisting jobseekers to find employment (ANAO, 2009).[5]

Jobseekers were subject to financial penalties (e.g. percentage reductions in payment rates for fixed periods, or non-payment periods) for committing administrative breaches (e.g. missing an appointment), activity breaches (e.g. not actively looking for work) or moving to areas where there were lower employment prospects (PC, 2002). In response, payments could be suspended for up to eight weeks (PC, 2002). Over the lifespan of JN, the Department of Education, Employment and Workplace Relations (DEEWR) also gradually increased the complexity of provider contracts, and intensified its monitoring of contract compliance (Considine *et al.,* 2011; Stromback, 2008).

Early evaluations of JN found that it was more cost effective than previous programs, but employment outcomes were mixed; the overall effects were likely small, similarly to other comparable programs in Australia and elsewhere (DEEWR, 2002; PC, 2002; DEEWR, 2006). In 2008, another DEEWR study reported that those in the intensive support phases (where >90 per cent of Indigenous jobseekers were placed) were, in the first support phase, 5.8 per cent more likely to be employed, and in the second phase, 6.4 per cent more likely. However, the reasons behind early exits and the length of time it took to place people into jobs are unknown (Stromback, 2008).

DEEWR (2007) found that, under the Active Participation Model of JN, jobseekers were better engaged and employment outcomes were sustained for longer. However, DEEWR (2008) later remarked that the rate of jobseekers receiving unemployment benefits for five or more years had increased from one in ten in 1999 to nearly one in four by 2008, signalling a growing group of long-term unemployed.

Others argued that even those who found employment were often under-employed (Stromback, 2008) and that, because it was overly prescriptive in its contracting arrangements, JN contradicted its original intention of improving service flexibility. Considine *et al.* (2011, p. 827) also argued that the increased monitoring of providers resulted in some "…shifting some of their resources away from providing one-on-one assistance to jobseekers, and towards local administration".

Ultimately, the findings were mixed. JN also failed to take a broader focus on economic development or structured mobility—the things that Brough (2006) had talked about earlier. However, work was in tow (e.g. Brough and Hockey, 2007) to

4 To encourage providers to support disadvantaged jobseekers, outcome payments increased depending on the length of the jobseeker's previous term of unemployment (ANAO, 2009).
5 Although a lump-sum commencement fee was paid to providers under earlier versions of the JN, this was dropped from 2003 onwards (Thomas 2007).

bring these matters to the forefront when a change in government in late 2007 put an end to the Coalition's proposed reforms.

Job Services Australia

In the shadow cast by the Northern Territory Emergency Response, the Labor Party won the December 2007 election under the leadership of Kevin Rudd. It announced a review of existing programs and, in October 2008, released a discussion paper proposing plans for a new program (O'Connor, 2008). JN was replaced with JSA in 2009.

JSA operated in remote Australian communities from July 2009 until July 2013, though it continued to operate in urban and regional areas until 2015. In 2009, the overall JSA caseload was ≥700,000 (Clare, 2009); by 2011, about 12.5 per cent of all JSA jobseekers (i.e. around 89,000 people) were Indigenous and a further 37 per cent of these (i.e. around 32,930 people) lived in remote or very remote areas (DEEWR, 2012b).

JSA jobseekers were offered differing levels of support, depending on their degree of disadvantage, and were placed into suitable support 'streams' (Australian Government, 2013a). These streams were brought under the same contract, meaning single providers had to offer support across all streams rather than specialising, as they had done under JN, though they could also sub-contract where needed (Considine *et al.,* 2014). JSA also encouraged providers to engage with employers to a greater extent than had occurred under JN (e.g. employer feedback was included, for the first time, in performance management of JSA providers by DEEWR (Considine *et al.*, 2014)).

JSA had a less punitive jobseeker compliance regime than JN (Considine *et al.*, 2014). While there was an automatic eight-week period of non-payment after three breaches (activity, administrative, or serious non-compliance) under JN, JSA jobseekers lost each day's allowance for each day of activity that they missed without a reasonable explanation (Considine *et al.,* 2014). They could also negotiate to make up the missed period.

JSA providers could access:

- up-front funding through the flexible Employment Pathway Fund to assist clients to overcome vocational and non-vocational employment barriers,
- job-placement fees, when a provider placed a jobseeker into a vacancy, and the jobseeker worked for a minimum number of hours over ten days, and
- tiered outcome payments, when jobseekers moved into employment for a period of 13 or 26 weeks (DEEWR, 2012a).[6]

Each JSA provider was required to have an Indigenous Employment Strategy, which had to include each provider's plan for attracting and retaining Indigenous staff (DEEWR, 2012b). However, JSA did not include a strategy for improving employment opportunities beyond its provider network. (This may have been because it was primarily targeted towards urban areas, which had stronger labour markets.)

6 Outcome payments were increased under JSA from 30 per cent of the total payment for each jobseeker to 50 per cent of the total payment (Considine et al., 2014). Established timeframes for transitioning jobseekers into work experience and employment were also introduced (Bowman and Horn, 2010).
In 2012, tiered payments were combined into two single payments made at 13 and 26 weeks after audits were conducted in response to allegations that some providers were submitting false claims (Ellis, 2012).

An evaluation of JSA for Indigenous jobseekers indicated that it had been "…reasonably successful in placing Indigenous people into employment", but that the improvements were not occurring at a rate that would enable Indigenous employment targets set under the Closing the Gap framework (agreed by the Council of Australian Governments in 2008) to be achieved (DEEWR, 2012b, p. 61). Other outcomes, including in education and training, were mixed (DEEWR, 2012b). Modest improvements were seen in the number of Indigenous staff employed by JSA providers, though the overall impacts of this increase on Indigenous employment rates would have been minimal at best (DEEWR, 2012b).

Ultimately, DEEWR (2012b, p. 13) warned, "…any one government program, even a large program like JSA, cannot be expected in isolation to address the disparity in economic participation between the Indigenous and non-Indigenous populations, particularly over a relatively short period." At the time of DEEWR's report, consultations were already under way to inform a new program for remote areas (DEEWR, 2012b, p. 33).

Remote Jobs and Communities Program

The RJCP replaced JSA, CDEP and Disability Employment Services in remote areas on 1 July 2013. It introduced "major reforms" to employment services for remote Indigenous communities with a view to providing a more effective model than those seen in the past to get Indigenous people in remote communities "into jobs" and to "participate in their communities" (Macklin, 2013). RJCP carried a caseload of approximately 37,000 jobseekers in its first two years; all lived in remote areas and about 83 per cent (i.e. approximately 30,710) identified as Indigenous (Fowkes and Sanders, 2016).

RJCP was meant to intensify the focus on broader economic development and engagement. For example, the Community Action Plans (CAPs) were meant to document community-wide "…priorities for social and economic participation and development" (Australian Government, 2013b, p. i), while Workforce Development Strategies (WDS) documented the strengths and needs of the existing workforce and the types of local employment opportunities that were available, in an effort to synchronise the two. RJCP also involved a Remote Youth Leadership and Development Corps (RYLDC), which was a 9–12 month up-skilling and training program intended for youths aged ≤24 years.

RJCP involved a Participation Account, which enabled providers to offer individualised up-front support to jobseekers. Providers also received:

- fee-for-service payments for delivery of case management and activities,
- job-placement payments (for short-term work experience), and
- outcome payments when jobseekers commenced/completed education and/or moved into employment (at seven, 13 and 26 weeks) (ANAO, 2017).

A Community Development Fund (CDF) ($237.5 million over five years) was also intended to "…help improve communities and support social and economic participation" (Macklin, Snowdon and Collins, 2013). The RJCP compliance

framework was the same as that employed under JSA and included no-show-no-pay activity penalties and 'serious' penalties.

The early days of RJCP were fraught. For instance, lead-in times for providers were incredibly short and confusion amongst jobseekers was high due to the quick changeover (Fowkes and Sanders, 2015). There was also administrative complexity in accessing Participation Account and CDF monies, as well as concerns that the overall level of funding was insufficient for highly-disadvantaged jobseekers.

There were a greater number of financial penalties applied per year under RJCP than under JSA (Fowkes and Sanders, 2016c). Fowkes and Sanders (2016c) argued that this was likely due to different and more onerous program requirements (e.g. starting work-for-the-dole requirements immediately, rather than after 12 months), fewer protections for remote jobseekers, and jobseeker decisions to actively disengage.

Although a formal evaluation of RJCP was planned, it was never undertaken. Not long after the Program was introduced, in September 2013, another federal election saw the demise of the Labor Government (which had been returned to Rudd's leadership from Julia Gillard, in only June of that year). Tony Abbott became Prime Minister and RJCP was targeted for change. By the end of 2013 Minister for Indigenous Affairs, Nigel Scullion, said "RJCP is a disaster. People aren't turning up for work and are returning to alcohol. That's why I'm acting quickly to re-engage people before it's too late" (Scullion, 2013). The heavy emphasis on engagement rather than job transition was telling of what was to come; in this frenzied climate, there was arguably little room for thoughtful consideration of alternative approaches that could achieve outcomes beyond mere programmatic engagement.

Community Development Program

In December 2014, Scullion announced that "The Abbott Government is to embark on a major reform of employment services in remote Australia to put an end to sit-down welfare" (Scullion, 2014). Scullion urged, "These changes will be rolled out carefully and methodically—it won't be rushed… We are committed to not disrupting communities by repeating the mistakes of the past" (Scullion, 2014). However, as the fifth new program in (at that point) only a seven-to-eight-year period, disruption was inevitable. CDP subsequently replaced RJCP from 1 July 2015 and, by September 2017, 33,000 were participating, of which more than 80 per cent (i.e. ~26,400) identified as Indigenous (DPM&C, 2017b; ANAO, 2017).

CDP's key emphasis is on work-for-the-dole activities, with comparatively little focus on intensive case management to support disadvantaged jobseekers. There are no up-front commencement payments under CDP and no equivalent to the RJCP Participation Account. Providers receive service payments to deliver jobseeker support (≤$4,000 per jobseeker annually) and run work-for-the-dole activities (≤$12,450 per jobseeker annually) (ANAO, 2017). Providers can also receive payments for employment outcomes (but not education outcomes) at 13 and 26 weeks (ANAO, 2017). (The seven-week category that existed under RJCP was removed.)

Outcome payments are weighted towards the 26-week employment milestone, which differs from RJCP, where providers could receive payments earlier (see Table 1). Furthermore, CDP jobseekers have to work consecutively for 26 weeks for the provider to be eligible for the 26-week payment, while under RJCP, the jobseeker could work for 26 weeks over a maximum period of 52 consecutive weeks (ANAO, 2017).

Table 1: Employment outcome payments under RJCP and CDP

Payment interval	*RJCP*		*CDP*	
	Amount ($)	*Proportion of total payment (%)*	*Amount ($)*	*Proportion of total payment ($)*
Job placement	550	9	0	0
7 weeks	825	13	0	0
13 weeks	2,475	39	2,250	30
26 weeks	2,475	39	5,250	70
Total	6,325	100	7,500	100

Source: ANAO, 2017, p. 30.

Under CDP, Employer Incentive Funding is also available to employers that hire jobseekers in full-time positions for at least 26 weeks (DPM&C, 2015; ANAO, 2017). CDP has involved a dramatic increase in work-for-the-dole activity requirements to five days a week: a total of up to 25 hours of weekly participation.

The Commonwealth Department of Jobs and Small Business (2018) stated that RJCP was replaced with CDP "…to deliver better opportunities for remote jobseekers and foster stronger economic and social outcomes in remote Australia". There are, however, few means through which these outcomes can be achieved. For instance, the RJCP CDF, worth $47.5M per year, was replaced by the CDP Indigenous Enterprise Development Fund, worth only $25M per year (to be administered under the Indigenous Advancement Strategy tendering process), which contradicted Minister Scullion's earlier argument that the CDF did not provide *enough* support (Department of Prime Minister and Cabinet, 2016b). Jobs Australia (2015, p. 21) noted that providers had only received minimal funding through the Enterprise Development Fund and that "Many community stakeholders feel let down, yet again, that the job creation activities that they identified through the CAP [Community Action Plan, under RJCP] are not being supported."

More penalties have been applied per year under CDP than RJCP (ANAO, 2017). The ANAO (2017, p. 46) attributed this to the fact that providers had to "consistently enter jobseeker attendance data" and initiate compliance action.

A review of the CDP by the ANAO (2017) found that, although the transition between RJCP and CDP "…was largely effective" (p.7):

- the CDP design was based on incomplete analysis of the RJCP data,
- the timeframe for the changeover to the CDP was inadequate,
- per-unit costs of delivering CDP are higher than RJCP, and
- the Enterprise Development Fund and Employer Incentive Funding were "…significantly undersubscribed" (ANAO, 2017).

The review made one recommendation: that the DPM&C review the CDP provider payment structure, "…particularly the incentives it creates and its alignment with the underlying policy objectives of the program changes" (ANAO, 2017, p. 31). The concern was that there were fewer incentives for providers to focus on disadvantaged jobseekers.

Other criticisms of CDP have predominantly focused on:

- its overly punitive compliance regime (Fowkes, 2016a), which has led to significant hardships (Fowkes, 2016a; Kral, 2016),
- the disproportionate focus on work-for-the-dole activities when compared with requirements under comparable urban schemes (Altman, 2016), and
- a lack of employer incentives to transition jobseekers into employment (e.g. Fowkes, 2016, p. 14).

It was reported by the DPM&C in a Senate Estimates Hearing in 2016 that the proportion of jobseekers placed in and attending activities had risen since CDP began (Williams in HANSARD, 2016, p. 82). However, the figures cited were more likely administrative artefacts than real evidence of positive change (Fowkes, 2016a, p. 15), and no evidence was provided that program engagement was translating into improved employment outcomes.

On 9 May 2017, the Commonwealth Government announced that it would begin a consultation process on a new employment program for remote Australia (DPM&C, 2017a). Minister Scullion (2017) stated, "While the CDP has had great success[7] in delivering jobs and support for remote jobseekers, more needs to be done to break the cycle of welfare dependency and ensure jobseekers are actively engaged and contributing to their communities." What the new program—the sixth in the last ten years—will look like remained to be seen at the time this paper was written.

3. Comparing the programs

Table 2 compares the key characteristics of the four programs described above. This includes their delivery modes, funding structures and core components. The implications of these results are then discussed in the remaining sections of the paper.

7 However, no rigorous evaluative evidence has been provided in the public domain to demonstrate these successes.

Table 2: Comparison of funding structure and core components of Australian community employment programs, 2007–current

Program	*Approx. no. Indigenous jobseekers on caseload*	*Timeframe*[i]	*Delivery mode*	*Funding structure*					*Core components*				
				Commencement payment	*Jobseeker account/ pool of funds*	*Fee-for-service funding?*	*Placement/ outcome payments?*	*Economic development funding?*	*Work-for-the-dole?*	*Job-search support?*	*Job readiness / training?*	*Job transition support?*	*Intensive support mode*[iii]
JN	74,644 (no. regional vs. remote unclear)	2007–2009	Job services contracted to non-government providers	No[ii]	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
JSA	89,000 (approx. 32,930 remote/ very remote)	2009–2013	Job services contracted to non-government providers	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
RJCP	30,710 (all regional/ remote)	2013–2015	Job services contracted to non-government providers	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CDP	~26,400 (all regional/ remote)	2015–current	Job services contracted to non-government providers	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No[iv]

i The timeframes included here refer to the duration of operation in remote communities, not overall (e.g. JN operated from 1998, but was only officially extended to remote areas in 2007).
ii Commencement payments were part of the original JN, but were removed from 2003 onwards and thus, were not present from 2007–2009.
iii Specific support protocols or services targeted at disadvantaged jobseekers.
iv Regional employment targets are intended to take into account the relative disadvantage of jobseekers in CDP regions and the availability of employment opportunities, but other than this, there is no dedicated avenue for intensive service delivery for disadvantaged jobseekers.

4. Discussion: similarities, differences and possible lessons for future policymaking

Australia has experienced five different community employment programs in just over a decade, with a sixth program on its way. This period of frenetic program shifts has confused jobseekers and dismayed providers (e.g., Nagaiya in James, 2015; Marra Worra Worra Aboriginal Corporation, 2016), who have constantly had to reapply for funds under different contracts, learn new approaches and retrain their staff. A lack of long-term funding security also contributes to job instability (Sanders, 2016), including for Indigenous staff.

Where providers have changed altogether, there has undoubtedly been a loss of knowledge and expertise on the ground and the work undertaken by caseworkers to develop relationships with jobseekers is essentially undone. On the other hand, jobseekers are frequently required to deal with new organisations, people and rules. This type of service delivery environment contradicts published standards of best practice and cannot be conducive to achieving employment outcomes. Over the same period, labour-force and employment rates have remained largely stagnant.

Although employment programs are only one of many influences on employment data, the national Indigenous employment rate actually fell from 48 per cent in 2006 to 46.6 per cent in 2016 (DPM&C, 2018). This was, in part, due to the removal of CDEP over this time, which was counted as employment. However, even where CDEP employment is separated from the 2006 and 2011 data (in the same manner as Gray, Hunter and Howlett, 2013) to measure employment outside of the Program, the national gap in employment rates between Indigenous and non-Indigenous Australians will take decades to close at the current rate of change, and even longer in remote areas (Staines, 2018). Finally, while there are few *independent* evaluations of the programs described here, those that do exist do not show particularly remarkable results. These continued poor outcomes suggest a need for policy change. However, as demonstrated in Table 2 (above), despite frenetic program shifts, the underlying policy approaches over the last decade have remained largely steady.

It is not the intention here to underplay the differences between these programs; there have certainly been changes that have had significant impacts on the ground. However, these variations have mainly involved amplifying or toning down existing elements, rather than rational policy change. For example, all models have involved outcome payments as a key financial incentive for providers. The nature (e.g. number, volume, timing) of these payments have been tweaked from program to program, but to little effect (as discussed later). All programs have also involved very similar key elements. For instance, work-for-the-dole activities have been a key component of all four programs, though the focus of this element has intensified under CDP.

Fowkes (2011) made a similar finding with respect to JN and JSA and claimed that, despite programmatic change, little had been done to address fundamental problems that lie at the core of both programs. This paper shows that, seven years on, the same argument applies to RJCP and CDP. While the features of these programs have been tweaked, the underlying principles are the same and there are core structural issues that have not yet been addressed. This is highly problematic, particularly when considered against stagnant and/or worsening employment data. The remaining sections of this paper provide some brief examples of these underlying problems.

Delivery mode

All of the programs described in this paper are based on very similar versions of the purchaser-provider model that was originally introduced under JN. The key change over time has been that all subsequent programs have adopted increasingly strict monitoring of provider performance. Simultaneously, providers have become increasingly "businesslike" and intensified their focus on financial outcomes (Considine and Nguyen, 2014).

This shift towards increased bureaucratic control over providers forces them to spend more time on administration than on supporting jobseekers (Fowkes, 2016a; Considine *et al.,* 2014; Fowkes and Sanders, 2015). It also means that they do not have the flexibility required to adapt approaches to suit local needs. For Indigenous providers in particular this means that, even if they have local knowledge and expertise about how to best deliver services within their own communities, there is little to no flexibility in the contracts to allow them to act on their expertise (e.g. see Fowkes and Sanders, 2015 regarding RJCP); bureaucracy essentially smothers local control.

This is not an empowering framework and undermines the true value that Indigenous providers can bring. Furthermore, increasing downward pressure on providers without addressing other significant structural employment barriers has not achieved the desired outcomes to date, and therefore, is highly unlikely to do so into the future.

Core program components

All four programs described here include very similar core components. For example, work-for-the-dole requirements have been a feature of all programs, but have intensified over time. Jobseekers have gone from having to participate in activities after a period of 12 months (under JSA, for example) to participating immediately under RJCP and CDP. Provider discretion under RJCP was also removed under CDP and the number of participation hours required has also dramatically increased.

Remote communities generally have weaker markets and fewer opportunities for employment than regional or metropolitan areas. In these economies, intermediate labour markets[8], like work-for-the-dole labour, can play an important role. They present opportunities for un- or under-skilled jobseekers to develop the capabilities needed to move into an open labour market, and/or to begin to demonstrate the types of entrepreneurial behaviours and thinking that can help to *create* open markets, over time (Forrest Review, 2014, p. 155). However, this benefit can quickly be undermined when intermediate markets become too strong and entrenched, and thereby stifle opportunities for normalised markets to take root and grow.

Although CDEP was heavily criticised by some for its perverse macro-economic impacts (Pearson, 2009), these effects have also been felt to varying degrees under subsequent programs. Because all work-for-the-dole activities involve the provision of what is essentially free labour (i.e. heavily or fully subsidised through

8 A form of transitional employment, which produces social benefits for the local community (Marshall and Macfarlane, 2000).

welfare payments), it is inevitable that they undercut mainstream markets to some extent by undermining competition (Personal communication with Cape York Institute, 2016). In a practical sense, intensive work-for-the-dole requirements can also leave jobseekers with little spare time to pursue the kind of entrepreneurship needed to move them into employment (Altman, 2016) and may also discourage jobseekers from moving elsewhere to take up outside employment opportunities.

Future policymakers must be acutely attuned to this problem and recognise the paramount importance of striking a balance between using intermediate labour markets to benefit jobseekers, versus stifling and monopolising opportunities for economic growth. Part of this balancing exercise is also about ensuring that appropriate funding, resources and support are directed to grassroots enterprise development, as well as attracting investment from external private enterprise. Although this occurred to some extent under previous programs, CDP is marked by a dramatic reduction in funding to support economic development. Other strategies outside of CDP (e.g. Indigenous Procurement Policy and Indigenous Business Australia) *have* sought to bolster Indigenous enterprise, but have had mixed success (e.g. Jacobs, 2017; Piesse, 2016). However, if Indigenous entrepreneurship and businesses are to thrive, greater support is needed to address social barriers and develop capacity (Spencer et al., 2017; Howard and Foley, 2006).

Although intermediate labour markets can be useful stepping stones, their real benefits are more likely to be felt when they are transitory and encourage the longer-term growth and strengthening of open markets. Ultimately, the employment programs considered in this paper have not included, nor been supplemented with, successful strategies for overcoming this core structural issue.

Funding structure

Funding structures have remained very similar across the programs. One of the main 'tweaks' has been to the timing and volume/magnitude of outcome payments. For instance, payments were available at 13 and 26 weeks under both JN and JSA, and were paid gradually over time. This was similar under RJCP, where payments were available at earlier intervals (e.g. a seven-week category was added) and were made incrementally (ANAO, 2017). However, this changed under CDP, where payments are now only made at 13 weeks (30 per cent of the overall payment) and at 26 weeks (where the remaining 70 per cent of the fee is paid) (ANAO, 2017).

Ideally, programs will incentivise providers to move jobseekers off their books and into employment. However, at different times, well-intended funding structures have actually created perverse economic incentives for providers to 'cream' (i.e. pay disproportionate attention to less disadvantaged jobseekers who are more likely to move into employment) and 'park' (i.e. pay less attention to disadvantaged jobseekers who are less likely to be employed) jobseekers (Carter and Whitworth, 2015; ANAO, 2009). The practice of creaming increases providers' chances of collecting outcome payments, while parking enables them to claim ongoing activity and administration payments to keep jobseekers on their books and 'busy'.

One Indigenous provider (in Fowkes, 2016a) described that, under CDP, they had a choice between keeping jobseekers on work-for-the-dole activities for an annual

income of over $12,450 versus moving them into employment where, *if* the jobseeker makes it to the 26-week mark, the provider may receive a $7,500 employment outcome fee. The latter is a risk while the work-for-the-dole income is guaranteed (Fowkes, 2016a). This incentive to park disadvantaged jobseekers is also greater under CDP because of a lack of additional up-front funding to address complex barriers to employment (Dockery and Lovell, 2016).

Targeted funding for disadvantaged jobseekers was available under JN, JSA and RJCP, though these funding pools were found to be too small and the administrative burdens too high, at least under JN (Thomas, 2007) and RJCP (Fowkes and Sanders, 2015). Under CDP, this funding is simply not available. This increases the level of risk providers must take on in preparing disadvantaged jobseekers for employment; ultimately, it is a smarter business move to park them and focus on creaming less disadvantaged jobseekers.

It is surprising that, even after these issues were repeatedly raised with previous programs, the CDP model has arguably led to even more perverse incentives than existed previously—perhaps a further indication that policy learning in this space is lacking.

5. Conclusion

Indigenous labour-force participation and employment remains low despite decades of intervention from employment programs. This paper describes and discusses programs that have been implemented from 2007 onwards, when CDEP, began to be rolled back. It argues that, despite rapid program shifts in the last decade, which have dismayed service providers and jobseekers alike, the underpinning policies have remained very similar. In this regard, Fowkes' (2011) argument about JN and JSA is, seven years later, equally relevant to RJCP and CDP; fundamental policy issues that prevent greater traction and progress towards outcomes have still not been addressed.

The fact that the programs from 2007 onwards have failed to address these core issues, and in some cases worsened them, indicates evidence of either severe incrementalism, where policy learning has been minimal at best, or an intentional use of programming as a political veneer to disguise negligible progress (Althaus, Bridgman and Davis 2018, p. 183; Quiggin, 2006). However, despite the impetus, the reality is that mere 'tweaking' of program content and emphases has not yet produced the desired results, and is unlikely to produce these into the future. Radical change is needed.

A starting point might be to consider alternative models proposed in the literature (e.g. Fowkes, 2011; Carter and Whitworth, 2015; Jordan and Fowkes, 2016). However, there needs to be strong political will to change. Whether or not the new program, due to replace CDP in late 2018, will take a different approach remains to be seen. However, the recent history described in this paper indicates that it is sadly unlikely.

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